

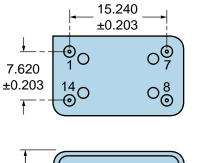
trequency Tolerance/Stability       ±100ppm Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C         upperating Temperature Range       -40°C to +85°C         Sougget at 25°C       ±5ppm/year Maximum         operating Temperature Range       -40°C to +85°C         supply Voltage       5.07dc ±10%         optic Urrent       45mA Maximum (Unloaded)         voltupt Voltage Logic High (Voh)       2.4Vdc Minimum (IOC = +16mA)         utput Voltage Logic High (Voh)       2.4Vdc Minimum (IOC = +16mA)         utput Voltage Logic Kight       10TTL Load Maximum         int Connection       Power Down (Disable Output: Logic Low)         int 1 Input Voltage (Vih and Vil)       +2.0Vdc Minimum to enable output; +0.8Vdc to disable output, No Connect to enable output.         isable Current       30mA Maximum (Pin 1 = Ground)         isable Current       30mA Maximum, SopSec Typical         MS Period Jitter (tRMS)       13pSec Maximum, SopSec Typical         MS Period Jitter (tRMS)       13pSec Maximum         torage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS       MIL-STD-883, Method 1014, Condition C         ine Leak Test       MIL-STD-883, Method 2004	ELECTRICAL SPECIFICAT	TIONS	
Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C         #Sppm/year Maximum           parating Temperature Range         -40°C to +85°C           supply Voltage         5.0Vdc ±10%           nput Current         45mA Maximum (Unloaded)           voltage Logic High (Voh)         2.4Vdc Minimum (IOH = -16mA)           voltage Logic Low (Vol)         0.4Vdc Maximum (Measured at 0.8Vdc to 2.0Vdc)           voltage Logic Low (Vol)         0.4Vdc Maximum (Measured at 0.8Vdc to 2.0Vdc)           voltage Capic Low (Vol)         0.4Vdc Maximum (Measured at 0.8Vdc to 2.0Vdc)           voltage Capic Low (Vol)         0.4Vdc Maximum (Measured at 0.8Vdc to 2.0Vdc)           voltage Capic Low (Vol)         0.4Vdc Minimum to enable output. Load; Measured at 50% of waveform with HCMOS Load)           odd Drive Capability         10TTL Load Maximum           voltage Capic Type         TTL           tin 1 Connection         Power Down (Disable Output: Logic Low)           tin 1 Connection         Power Down (Disable output, +0.8Vdc to disable output, No Connect to enable output.           tatadby Current         50mA Maximum (Pin 1 = Ground)           visable Current         30mA Maximum, 8pSec Typical           tits Period Jitter (tRK)         13pSec Maximum, 8pSec Typical           tits Up Time         100% Maximum           torage Tempera	Nominal Frequency	28.000MHz	
interview       -40°C to +85°C         interview       5.0Vdc ±10%         interview       45mA Maximum (Unloaded)         interview       2.4Vdc Minimum (IOH = -16mA)         interview       0.4Vdc Maximum (IOL = +16mA)         interview       0.4Vdc Maximum (IOL = +16mA)         interview       4nSec Maximum (IOL = +16mA)         interview       4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)         interview       50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)         interview       50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)         interview       10TTL Load Maximum         into Connection       Power Down (Disable Output: Logic Low)         int 1 Input Voltage (Vih and Vil)       +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.         intandby Current       50µA Maximum (Pin 1 = Ground)         isable Current       30mA Maximum, 50pSec Typical         IMS Period Jitter (tPK)       100pSec Maximum, 8pSec Typical         IMS Period Jitter (tRMS)       13pSec Maximum         itard Up Time       10mSec Maximum         itorage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         ine Leak Test       MIL-STD-883, Method 101	Frequency Tolerance/Stability	Operating Temperature Range, Supply Voltage Change, Output Load Change,	
Supply Voitage         5.0Vdc ±10%           Apput Current         45mA Maximum (Unloaded)           Dutput Voltage Logic High (Voh)         2.4Vdc Minimum (IOH = -16mA)           Dutput Voltage Logic Low (Vol)         0.4Vdc Maximum (IOL = +16mA)           Sitse/Fall Time         4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)           Dutput Voltage Logic Low (Vol)         0.4Vdc Maximum (IOL = +16mA)           Volto 2000         50 ±10(%) (Measured at 0.8Vdc to 2.0Vdc)           Daty Cycle         50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)           oad Drive Capability         10TTL Load Maximum           Dutput Logic Type         TTL           Tin 1 Connection         Power Down (Disable Output: Logic Low)           in 1 Connection         Power Down (Disable Output: Logic Low)           visable Current         50µA Maximum (Pin 1 = Ground)           visable Current         30mA Maximum, S0pSec Typical           MIS Period Jitter (tPK)         100pSec Maximum, 50pSec Typical           MIS Period Jitter (tRMS)         13pSec Maximum           vtorage Temperature Range         -55°C to +125°C           ENVIRONMENTAL & MECHANICAL SPECIFICATIONS           ine Leak Test         MIL-STD-883, Method 1014, Condition A           irross Leak Test         MIL-STD-883, Method 2004 <th>Aging at 25°C</th> <td>±5ppm/year Maximum</td>	Aging at 25°C	±5ppm/year Maximum	
Apput Current       45mA Maximum (Unloaded)         Dutput Voltage Logic High (Voh)       2.4Vdc Minimum (IOH = -16mA)         Dutput Voltage Logic Low (Vol)       0.4Vdc Maximum (IOL = +16mA)         Dutput Voltage Logic Low (Vol)       0.4Vdc Maximum (IOL = +16mA)         tise/Fall Time       4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)         Dutp Cycle       50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)         oad Drive Capability       10TTL Load Maximum         Dutput Logic Type       TTL         tin 1 Connection       Power Down (Disable Output: Logic Low)         tin 1 Input Voltage (Vih and Vil)       +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.         tisable Current       30mA Maximum (Pin 1 = Ground)         visable Current       30mA Maximum, 50pSec Typical         MS Period Jitter (tPK)       100pSec Maximum, 50pSec Typical         titart Up Time       10mSec Maximum         totrage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         ine Leak Test       MIL-STD-883, Method 1014, Condition A         iross Leak Test       MIL-STD-883, Method 2004	Operating Temperature Range	-40°C to +85°C	
Dutput Voltage Logic High (Voh)         2.4Vdc Minimum (IOH = -16mA)           Dutput Voltage Logic Low (Vol)         0.4Vdc Maximum (IOL = +16mA)           Stise/Fall Time         4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)           Dutput Voltage Logic Low (Vol)         50 ±10(%) (Measured at 0.8Vdc to 2.0Vdc)           Data Drive Capability         10TTL Load Maximum           Dutput Logic Type         TTL           Vin 1 Connection         Power Down (Disable Output: Logic Low)           in 1 Connection         Power Down (Disable Output: Logic Low)           Vin 1 Input Voltage (Vih and Vil)         +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.           Standby Current         S0µA Maximum (Pin 1 = Ground)           Visable Current         30mA Maximum, 8pSec Typical           MS Period Jitter (tPK)         100pSec Maximum, 8pSec Typical           RMS Period Jitter (tRMS)         13pSec Maximum           storage Temperature Range         -55°C to +125°C           ENVIRONMENTAL & MECHANICAL SPECIFICATIONS           Sine Leak Test         MIL-STD-883, Method 1014, Condition A           Gross Leak Test         MIL-STD-883, Method 2004	Supply Voltage	5.0Vdc ±10%	
Dutput Voltage Logic Low (Vol)         0.4Vdc Maximum (IOL = +16mA)           titse/Fall Time         4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)           buty Cycle         50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)           coad Drive Capability         10TTL Load Maximum           butput Logic Type         TTL           tin 1 Connection         Power Down (Disable Output: Logic Low)           tin 1 Input Voltage (Vih and Vil)         +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.           standby Current         50µA Maximum (Pin 1 = Ground)           bisable Current         30mA Maximum, 50pSec Typical           text to Peak Jitter (tPK)         100pSec Maximum, 8pSec Typical           text up Time         10mSec Maximum           torage Temperature Range         -55°C to +125°C           ENVIRONMENTAL & MECHANICAL SPECIFICATIONS           ine Leak Test         MIL-STD-883, Method 1014, Condition A           storss Leak Test         MIL-STD-883, Method 2004	Input Current	45mA Maximum (Unloaded)	
tise/Fall Time       4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)         buty Cycle       50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)         coad Drive Capability       10TTL Load Maximum         butput Logic Type       TTL         tin 1 Connection       Power Down (Disable Output: Logic Low)         tin 1 Input Voltage (Vih and Vil)       +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.         standby Current       50µA Maximum (Pin 1 = Ground)         bisable Current       30mA Maximum, SopSec Typical         tMS Period Jitter (tPK)       100pSec Maximum, 8pSec Typical         thart Up Time       10mSec Maximum         tworage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         ine Leak Test       MIL-STD-883, Method 1014, Condition A         foross Leak Test       MIL-STD-883, Method 2004	Output Voltage Logic High (Voh)	2.4Vdc Minimum (IOH = -16mA)	
50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)         oad Drive Capability       10TTL Load Maximum         Dutput Logic Type       TTL         tin 1 Connection       Power Down (Disable Output: Logic Low)         tin 1 Input Voltage (Vih and Vil)       +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.         titandby Current       50µA Maximum (Pin 1 = Ground)         visable Current       30mA Maximum, S0pSec Typical         tMS Period Jitter (tPK)       100pSec Maximum, 8pSec Typical         titart Up Time       10mSec Maximum         titorage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         time Leak Test       MIL-STD-883, Method 1014, Condition A         stross Leak Test       MIL-STD-883, Method 2004	Output Voltage Logic Low (Vol)	0.4Vdc Maximum (IOL = +16mA)	
in a Condext Capability       10TTL Load Maximum         butput Logic Type       TTL         in 1 Connection       Power Down (Disable Output: Logic Low)         +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.         standby Current       50µA Maximum (Pin 1 = Ground)         visable Current       30mA Maximum (Pin 1 = Ground)         veak to Peak Jitter (tPK)       100pSec Maximum, 50pSec Typical         tMS Period Jitter (tRMS)       13pSec Maximum         vistard Up Time       10mSec Maximum         etart Up Time       10mSec Maximum         etart Storage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         vine Leak Test       MIL-STD-883, Method 1014, Condition A         storss Leak Test       MIL-STD-883, Method 2004	Rise/Fall Time	4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)	
Dutput Logic TypeTTLtin 1 ConnectionPower Down (Disable Output: Logic Low)tin 1 Input Voltage (Vih and Vil)+2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.titandby Current50µA Maximum (Pin 1 = Ground)tisable Current30mA Maximum (Pin 1 = Ground)teak to Peak Jitter (tPK)100pSec Maximum, 50pSec TypicaltMS Period Jitter (tRMS)13pSec Maximum, 8pSec Typicaltitart Up Time10mSec Maximumtitorage Temperature Range-55°C to +125°CENVIRONMENTAL & MECHANICAL SPECIFICATIONStine Leak TestMIL-STD-883, Method 1014, Condition Atorses Leak TestMIL-STD-883, Method 2004	Duty Cycle	50 ±10(%) (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)	
Power Down (Disable Output: Logic Low)vin 1 ConnectionPower Down (Disable Output: Logic Low)vin 1 Input Voltage (Vih and Vil)+2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.SoµA Maximum (Pin 1 = Ground)visable Current30mA Maximum (Pin 1 = Ground)veak to Peak Jitter (tPK)100pSec Maximum, 50pSec TypicalMS Period Jitter (tRMS)13pSec Maximum, 8pSec Typicalvitart Up Time10mSec Maximumvitorage Temperature Range-55°C to +125°CENVIRONMENTAL & MECHANICAL SPECIFICATIONSvine Leak TestMIL-STD-883, Method 1014, Condition Aviross Leak TestMIL-STD-883, Method 2004	Load Drive Capability	10TTL Load Maximum	
in 1 Input Voltage (Vih and Vil)       +2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.         standby Current       50µA Maximum (Pin 1 = Ground)         bisable Current       30mA Maximum (Pin 1 = Ground)         reak to Peak Jitter (tPK)       100pSec Maximum, 50pSec Typical         tMS Period Jitter (tRMS)       13pSec Maximum, 8pSec Typical         tetart Up Time       10mSec Maximum         torage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         time Leak Test       MIL-STD-883, Method 1014, Condition A         Gross Leak Test       MIL-STD-883, Method 2004	Output Logic Type	TTL	
Standby Current50µA Maximum (Pin 1 = Ground)Jbisable Current30mA Maximum (Pin 1 = Ground)Veak to Peak Jitter (tPK)100pSec Maximum, 50pSec Typical10pSec Maximum, 50pSec Typical13pSec Maximum, 8pSec TypicalItter (tRMS)13pSec MaximumStorage Temperature Range-55°C to +125°CENVIRONMENTAL & MECHANICAL SPECIFICATIONSStime Leak TestMIL-STD-883, Method 1014, Condition AGross Leak TestMIL-STD-883, Method 1014, Condition CMIL-STD-883, Method 2004MIL-STD-883, Method 2004	Pin 1 Connection	Power Down (Disable Output: Logic Low)	
bisable Current       30mA Maximum (Pin 1 = Ground)         bisable Current       30mA Maximum (Pin 1 = Ground)         bisable Current       100pSec Maximum, 50pSec Typical         tMS Period Jitter (tRMS)       13pSec Maximum, 8pSec Typical         titart Up Time       10mSec Maximum         storage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         tine Leak Test       MIL-STD-883, Method 1014, Condition A         Gross Leak Test       MIL-STD-883, Method 1014, Condition C         tead Integrity       MIL-STD-883, Method 2004	Pin 1 Input Voltage (Vih and Vil)	+2.0Vdc Minimum to enable output, +0.8Vdc to disable output, No Connect to enable output.	
Peak to Peak Jitter (tPK)     100pSec Maximum, 50pSec Typical       IMS Period Jitter (tRMS)     13pSec Maximum, 8pSec Typical       Itart Up Time     10mSec Maximum       Itorage Temperature Range     -55°C to +125°C       ENVIRONMENTAL & MECHANICAL SPECIFICATIONS       Itine Leak Test     MIL-STD-883, Method 1014, Condition A       Gross Leak Test     MIL-STD-883, Method 1014, Condition C       Iterative     MIL-STD-883, Method 2004	Standby Current	50µA Maximum (Pin 1 = Ground)	
RMS Period Jitter (tRMS)       13pSec Maximum, 8pSec Typical         start Up Time       10mSec Maximum         storage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         sine Leak Test       MIL-STD-883, Method 1014, Condition A         storss Leak Test       MIL-STD-883, Method 1014, Condition C         storst Lead Integrity       MIL-STD-883, Method 2004	Disable Current	30mA Maximum (Pin 1 = Ground)	
iterat Up Time       10mSec Maximum         iterage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         ine Leak Test       MIL-STD-883, Method 1014, Condition A         Gross Leak Test       MIL-STD-883, Method 1014, Condition C         ead Integrity       MIL-STD-883, Method 2004	Peak to Peak Jitter (tPK)	100pSec Maximum, 50pSec Typical	
itorage Temperature Range       -55°C to +125°C         ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         ine Leak Test       MIL-STD-883, Method 1014, Condition A         iross Leak Test       MIL-STD-883, Method 1014, Condition C         iead Integrity       MIL-STD-883, Method 2004	RMS Period Jitter (tRMS)	13pSec Maximum, 8pSec Typical	
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS         ine Leak Test       MIL-STD-883, Method 1014, Condition A         irross Leak Test       MIL-STD-883, Method 1014, Condition C         iread Integrity       MIL-STD-883, Method 2004	Start Up Time	10mSec Maximum	
Fine Leak Test       MIL-STD-883, Method 1014, Condition A         Bross Leak Test       MIL-STD-883, Method 1014, Condition C         ead Integrity       MIL-STD-883, Method 2004	Storage Temperature Range	-55°C to +125°C	
Bit State     Bit State       Biross Leak Test     MIL-STD-883, Method 1014, Condition C       ead Integrity     MIL-STD-883, Method 2004	ENVIRONMENTAL & MEC	HANICAL SPECIFICATIONS	
ead Integrity MIL-STD-883, Method 2004	Fine Leak Test	MIL-STD-883, Method 1014, Condition A	
	Gross Leak Test	MIL-STD-883, Method 1014, Condition C	
Achanical Shock MIL-STD-202 Method 213 Condition C	Lead Integrity	MIL-STD-883, Method 2004	
Mil-37D-202, Method 213, Condition C	Mechanical Shock	MIL-STD-202, Method 213, Condition C	
Resistance to Soldering Heat         MIL-STD-202, Method 210	Resistance to Soldering Heat	MIL-STD-202, Method 210	
Itesistance to Solvents         MIL-STD-202, Method 215	Resistance to Solvents	MIL-STD-202, Method 215	

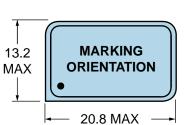
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010
Vibration	MIL-STD-883, Method 2007, Condition A

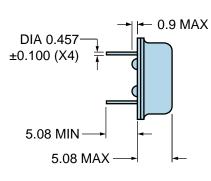
# EP1100ETPDL-28.000M

## MECHANICAL DIMENSIONS (all dimensions in millimeters)



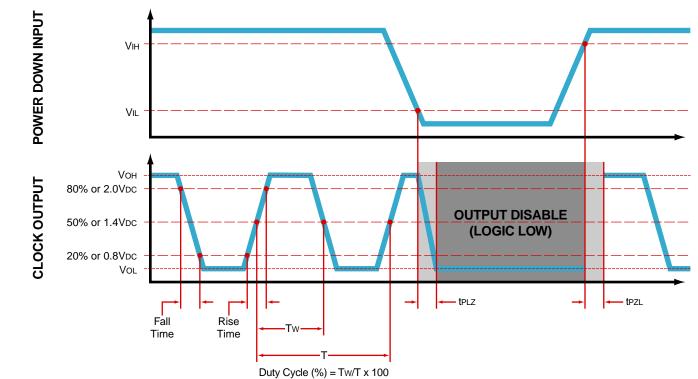






PIN	CONNECTION
1	Power Down (Logic Low)
7	Ground/Case Ground
8	Output
14	Supply Voltage
LINE	MARKING
1	ECLIPTEK
2	EP11PD EP11=Product Series
3	28.000M
4	XXYZZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

**OUTPUT WAVEFORM & TIMING DIAGRAM** 

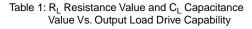


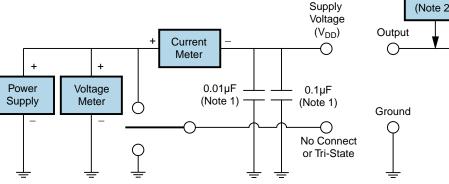
# EP1100ETPDL-28.000M

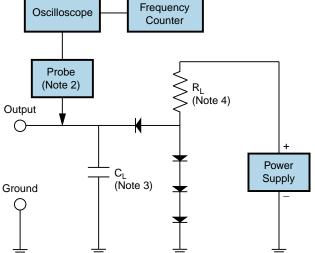


### Test Circuit for TTL Output

Output Load Drive Capability	R <sub>L</sub> Value (Ohms)	C <sub>L</sub> Value (pF)
10TTL	390	15
5TTL	780	15
2TTL	1100	6
10LSTTL	2000	15
1TTL	2200	3







Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground and V<sub>DD</sub> pin is required.

Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

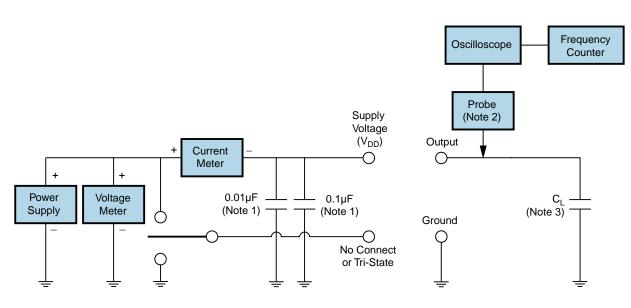
Note 4: Resistance value RL is shown in Table 1. See applicable specification sheet for 'Load Drive Capability'.

Note 5: All diodes are MMBD7000, MMBD914, or equivalent.

# EP1100ETPDL-28.000M



### **Test Circuit for CMOS Output**



Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground and V<sub>DD</sub> pin is required.

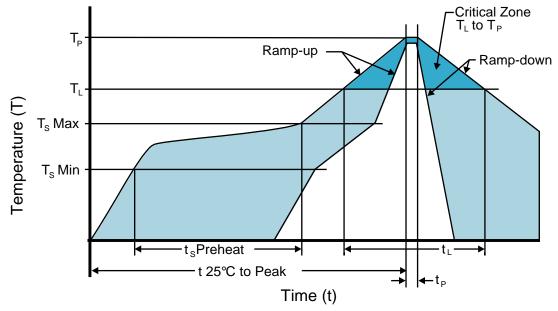
Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value  $\dot{C}_{L}$  includes sum of all probe and fixture capacitance.



## **Recommended Solder Reflow Methods**

EP1100ETPDL-28.000M



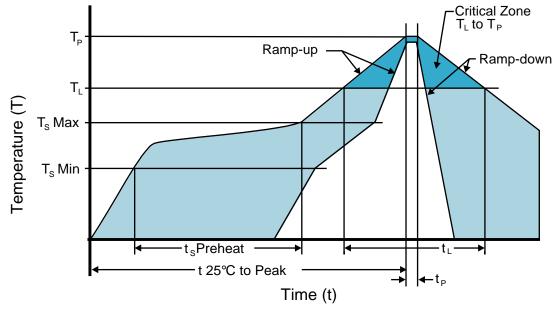
## High Temperature Solder Bath (Wave Solder)

$T_s$ MAX to $T_L$ (Ramp-up Rate)	3°C/second Maximum
Preheat	
- Temperature Minimum (Ts MIN)	150°C
- Temperature Typical (T <sub>s</sub> TYP)	175°C
- Temperature Maximum (T <sub>s</sub> MAX)	200°C
- Time (t <sub>s</sub> MIN)	60 - 180 Seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/second Maximum
Time Maintained Above:	
- Temperature (T∟)	217°C
- Time (t∟)	60 - 150 Seconds
Peak Temperature (T <sub>P</sub> )	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (T <sub>P</sub> Target)	250°C +0/-5°C
Time within 5°C of actual peak (t <sub>p</sub> )	20 - 40 seconds
Ramp-down Rate	6°C/second Maximum
Time 25°C to Peak Temperature (t)	8 minutes Maximum
Moisture Sensitivity Level	Level 1
Additional Notes	Temperatures shown are applied to back of PCB board and device leads only. Do not use this method for product with the Gull Wing option.



## **Recommended Solder Reflow Methods**

EP1100ETPDL-28.000M



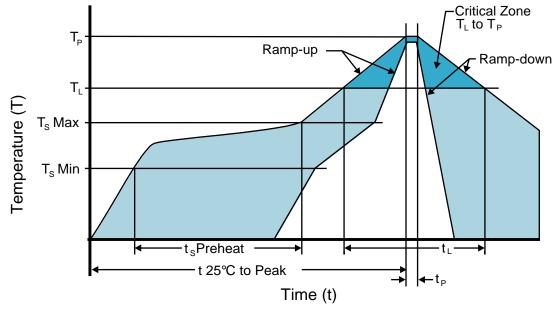
### Low Temperature Infrared/Convection 185°C

T <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	5°C/second Maximum
Preheat	
- Temperature Minimum (T <sub>s</sub> MIN)	N/A
<ul> <li>Temperature Typical (T<sub>s</sub> TYP)</li> </ul>	150°C
<ul> <li>Temperature Maximum (T<sub>s</sub> MAX)</li> </ul>	N/A
- Time (t <sub>s</sub> MIN)	60 - 120 Seconds
Ramp-up Rate (T⊾ to T <sub>P</sub> )	5°C/second Maximum
Time Maintained Above:	
- Temperature (T∟)	150°C
- Time (t∟)	200 Seconds Maximum
Peak Temperature (T <sub>P</sub> )	185°C Maximum
Target Peak Temperature (T <sub>P</sub> Target)	185°C Maximum 2 Times
Time within 5°C of actual peak ( $t_p$ )	10 seconds Maximum 2 Times
Ramp-down Rate	5°C/second Maximum
Time 25°C to Peak Temperature (t)	N/A
Moisture Sensitivity Level	Level 1
Additional Notes	Temperatures shown are applied to body of device. Use this method only for product with the Gull Wing option.



## **Recommended Solder Reflow Methods**

**EP1100ETPDL-28.000M** 



### Low Temperature Solder Bath (Wave Solder)

$T_s$ MAX to $T_L$ (Ramp-up Rate)	5°C/second Maximum
Preheat	
- Temperature Minimum (Ts MIN)	N/A
- Temperature Typical (T <sub>s</sub> TYP)	150°C
- Temperature Maximum (T <sub>s</sub> MAX)	N/A
- Time (t <sub>s</sub> MIN)	30 - 60 Seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )	5°C/second Maximum
Time Maintained Above:	
- Temperature (T∟)	150°C
- Time (t∟)	200 Seconds Maximum
Peak Temperature (T <sub>P</sub> )	245°C Maximum
Target Peak Temperature (T <sub>P</sub> Target)	245°C Maximum 1 Time / 235°C Maximum 2 Times
Time within 5°C of actual peak (t <sub>p</sub> )	5 seconds Maximum 1 Time / 15 seconds Maximum 2 Times
Ramp-down Rate	5°C/second Maximum
Time 25°C to Peak Temperature (t)	N/A
Moisture Sensitivity Level	Level 1
Additional Notes	Temperatures shown are applied to back of PCB board and device leads only. Do not use this method for product with the Gull Wing option.

#### Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only. This method can be utilized with both Gull Wing and Non-Gull Wing devices.)

#### **High Temperature Manual Soldering**

260°C Maximum for 5 seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only. This method can be utilized with both Gull Wing and Non-Gull Wing devices.)