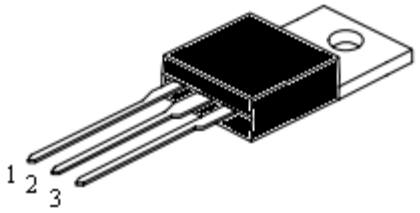
RX80N07

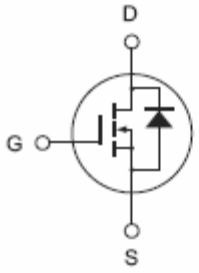
Silicon N Channel Power MOSFET

Description

The RX80N07 is n-channel enhancement mode trench power MOSFET with fast switching speed , low on-resistance. usually used at power switching application .



TO-220



1. Gate
2. Drain (Flange)
3. Source

Features

- **V_{DSS} =70V**
- **I_D =80A**
- **$R_{DS(on)}$＜8mΩ (V_{GS}=10V)**

Application

- **Switching application**

1、Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source voltage (V_{GS} = 0)	70	V
V_{GS}	Gate-source voltag	±25	V
I_D (1)	Drain current (continuous) at TC = 25℃	80	A
I_D (1)	Drain current (continuous) at TC=100℃	60	A
I_{DM} (2)	Drain current (pulsed)	300	A
P_D	Power dissipation at TC = 25℃	150	W
	Derating factor	2.0	W/℃
dv/dt (3)	Peak diode recovery voltage slope	12	V/ns
E_{AS} (4)	Single pulse avalanche energy	600	mJ
Tj Tstg	Operating junction temperature Storage temperature	-55 to 150	℃

1. Current limited by package
2. Pulse width limited by safe operating area
3. $I_{SD} \leq 80A$, $di/dt \leq 300A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_j \leq T_{JMAX}$
4. Starting T_J= 25 °C, I_D= 40A, V_{DD}= 37.5V

2、Thermal data

Symbol	Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		62.5		℃/ W
$R_{\theta JC}$	Thermal Resistance Junction-Case		0.5		℃/ W

3、Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	I_D=250μA, V_{GS}= 0	70			V
I_{DSS}	Zero gate voltage drain current (V_{GS} = 0)	V_{DS}=Max rating			1	μA
I_{GSS}	Gate body leakage current (V_{DS} = 0)	V_{GS} =±20V			±100	nA

$V_{GS(th)}$	Gate threshold voltage	V_{DS}= V_{GS}, I_D = 250μA	2	3	4	V
$R_{DS(on)}$	Static drain-source on resistance	V_{GS}= 10V, I_D= 40A		6.5	8	mΩ
g_{fs}(1)	Forward transconductance	V_{DS} = 15V, I_D = 40A		72		S
C_{iss} C_{oss} C_{rss}	Input capacitance Output capacitance Reverse transfer capacitance	V_{DS} =25V, f = 1 MHz, V_{GS} = 0		3800 740 260		pF pF pF
Q_g Q_{gs} Q_{gd}	Total gate charge Gate-source charge Gate-drain charge	V_{DD} = 60V, I_D = 80A V_{GS} =10V		120 28 49		nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	Turn-on delay time Rise time Turn-off delay time Fall time	V_{DD}=37.5V,I_D=45A, R_G=4.7Ω, V_{GS}=10V		26 100 67 32		ns ns ns ns
I_{SD}	Source-drain current				80	A
I_{SDM}(2)	Source-drain current (pulsed)				300	A
V_{SD}(3)	Forward on voltage	I_{SD} = 80A, V_{GS} = 0			1.5	V
t_{rr} Q_{rr} I_{RRM}	Reverse recovery time Reverse recovery charge Reverse recovery current	I_{SD} = 80A, di/dt = 100A/μs		133 660 10		ns nC A

1. Pulsed: pulse duration=300μs, duty cycle 1.5%
2. Pulse width limited by safe operating area
3. Pulsed: pulse duration=300μs, duty cycle 1.5%

4、Electrical characteristics (curves)

Figure 1 Safe operating area

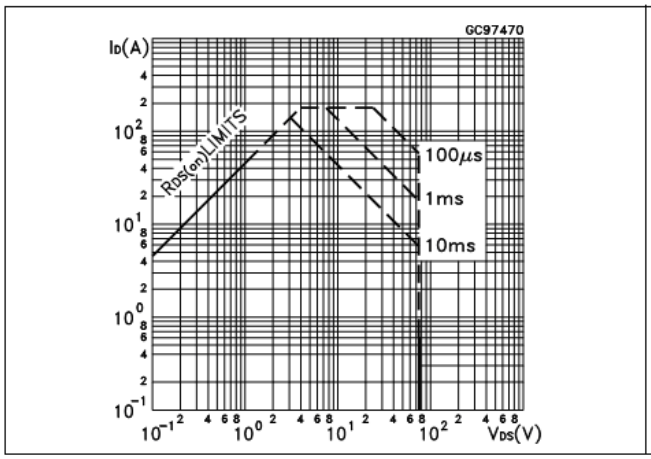


Figure 2. Thermal impedance

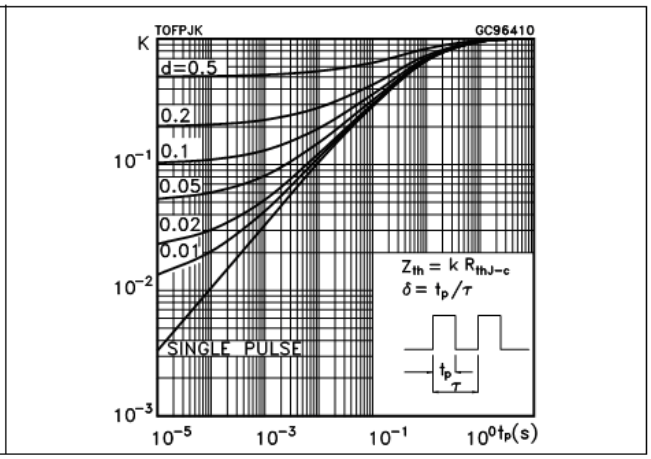


Figure 3 Output characterisics

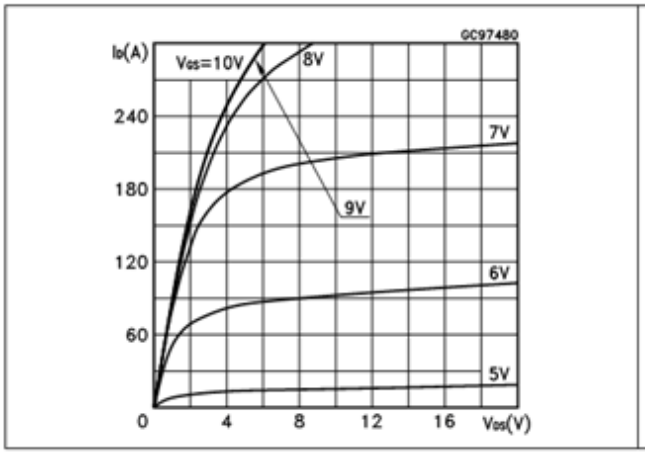


Figure 4 Transfer characteristics

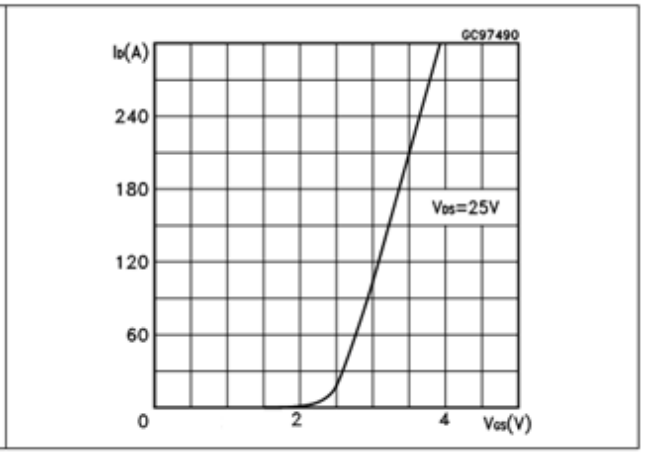


Figure 5. Transconductance

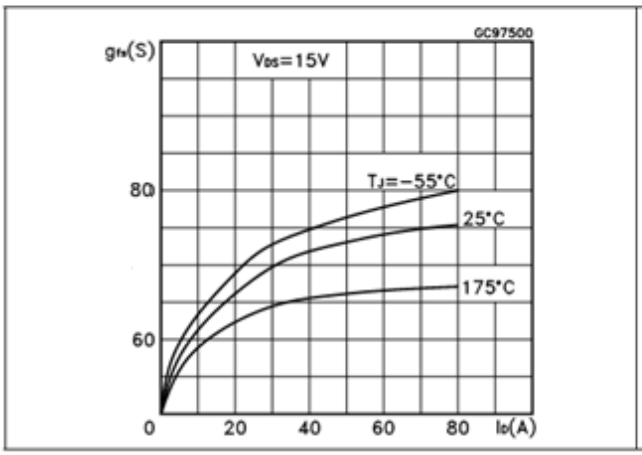


Figure 6 Static drain-source on resistance

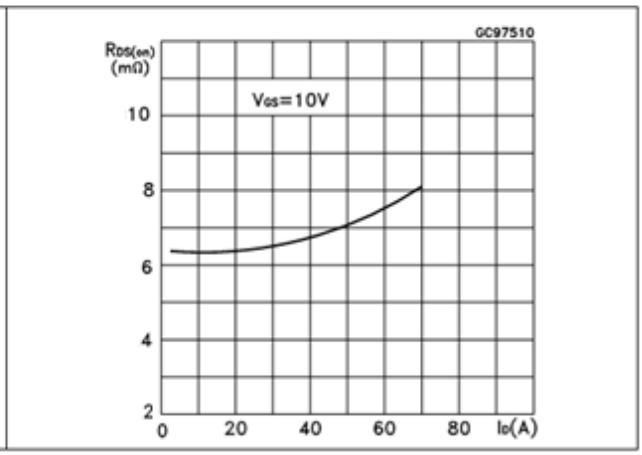


Figure 7. Gate charge vs gate-source voltage

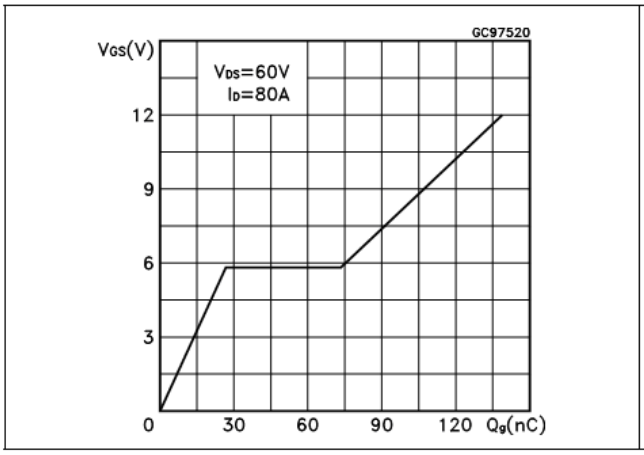


Figure 8 Capacitance variations

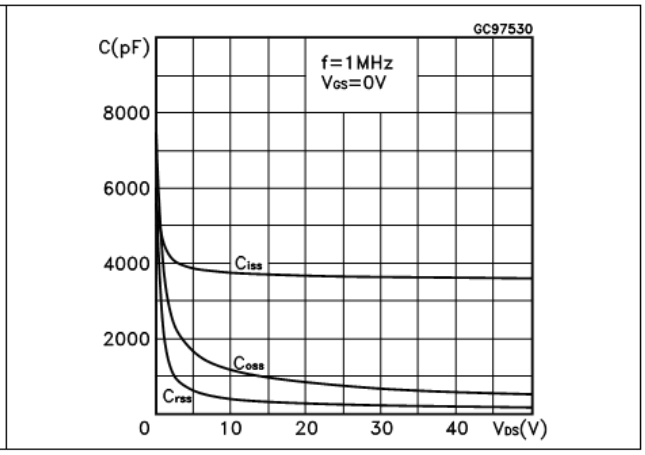


Figure 9 Normalized gate threshold voltage vs temperature

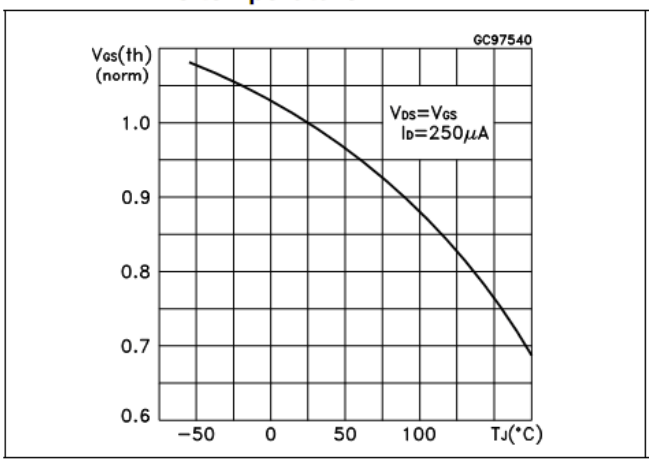


Figure 10 Normalized on resistance vs temperature

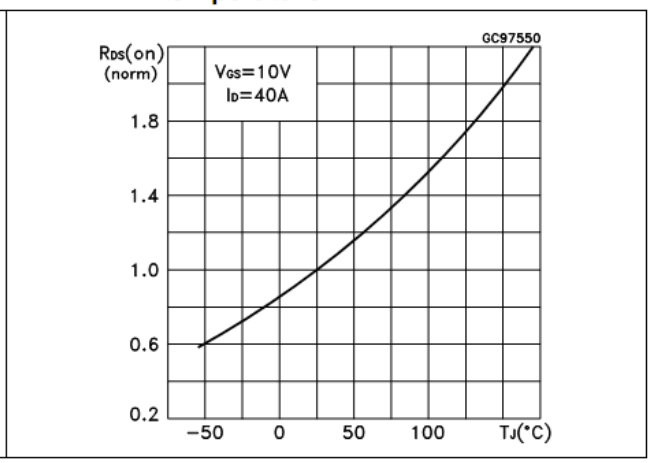


Figure 11 Source-drain diode forward characteristics

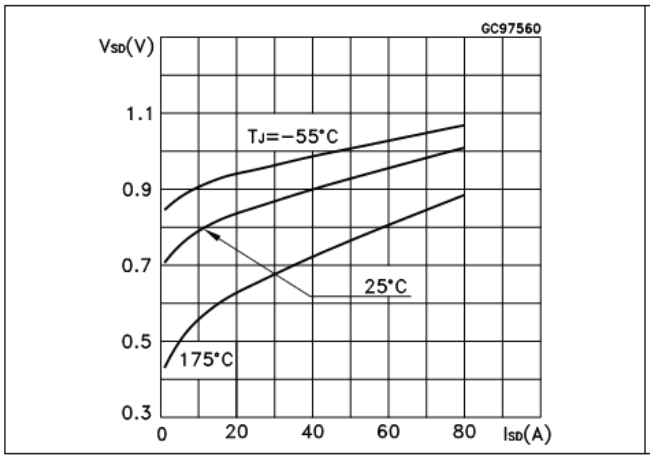
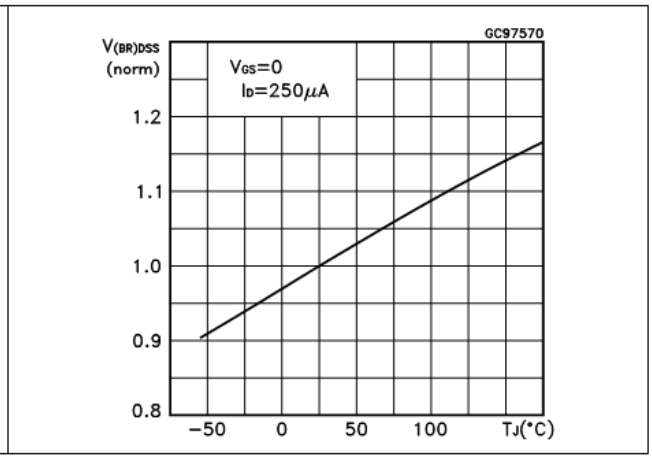
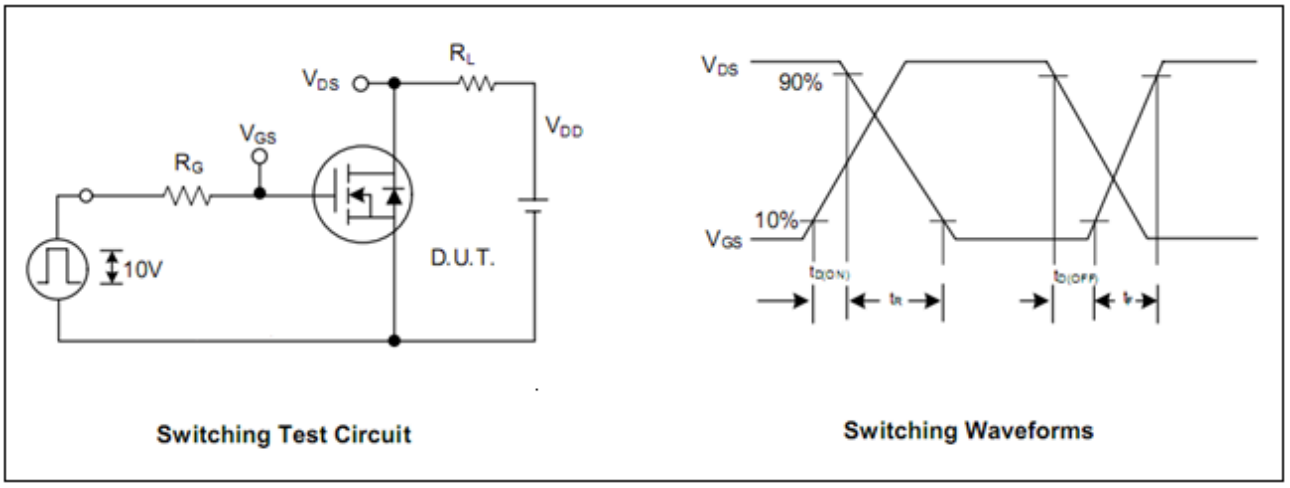


Figure 12 Normalized B_{VDSS} vs temperature

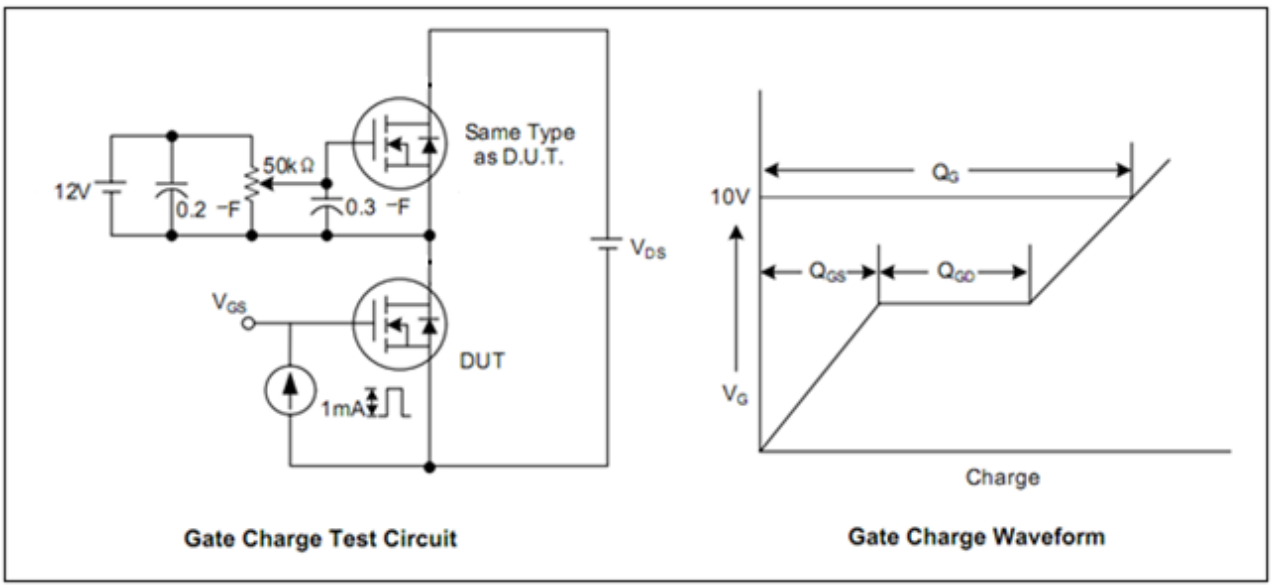


5、Test circuit



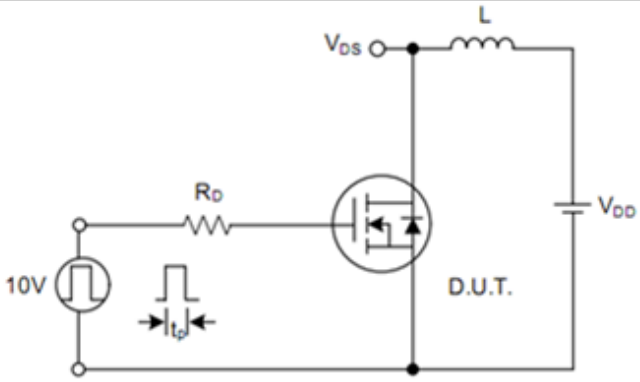
Switching Test Circuit

Switching Waveforms

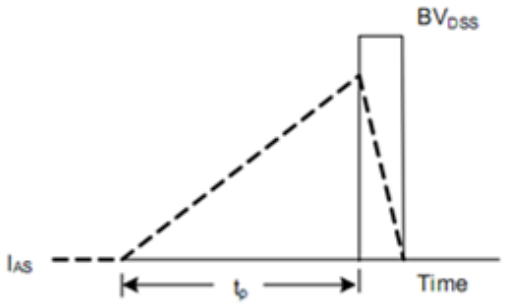


Gate Charge Test Circuit

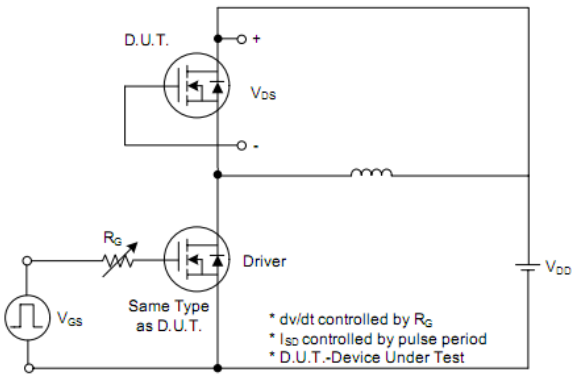
Gate Charge Waveform



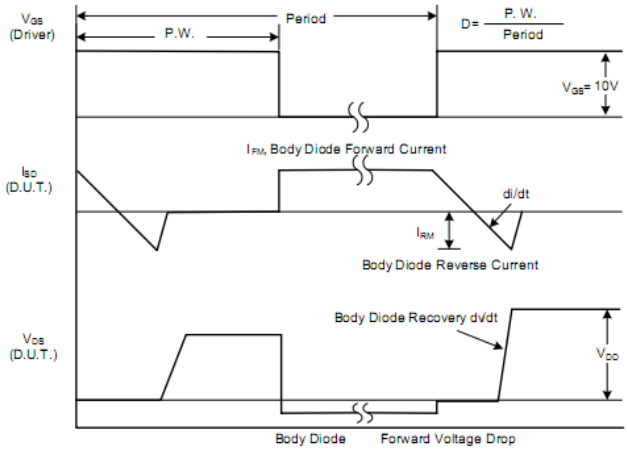
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

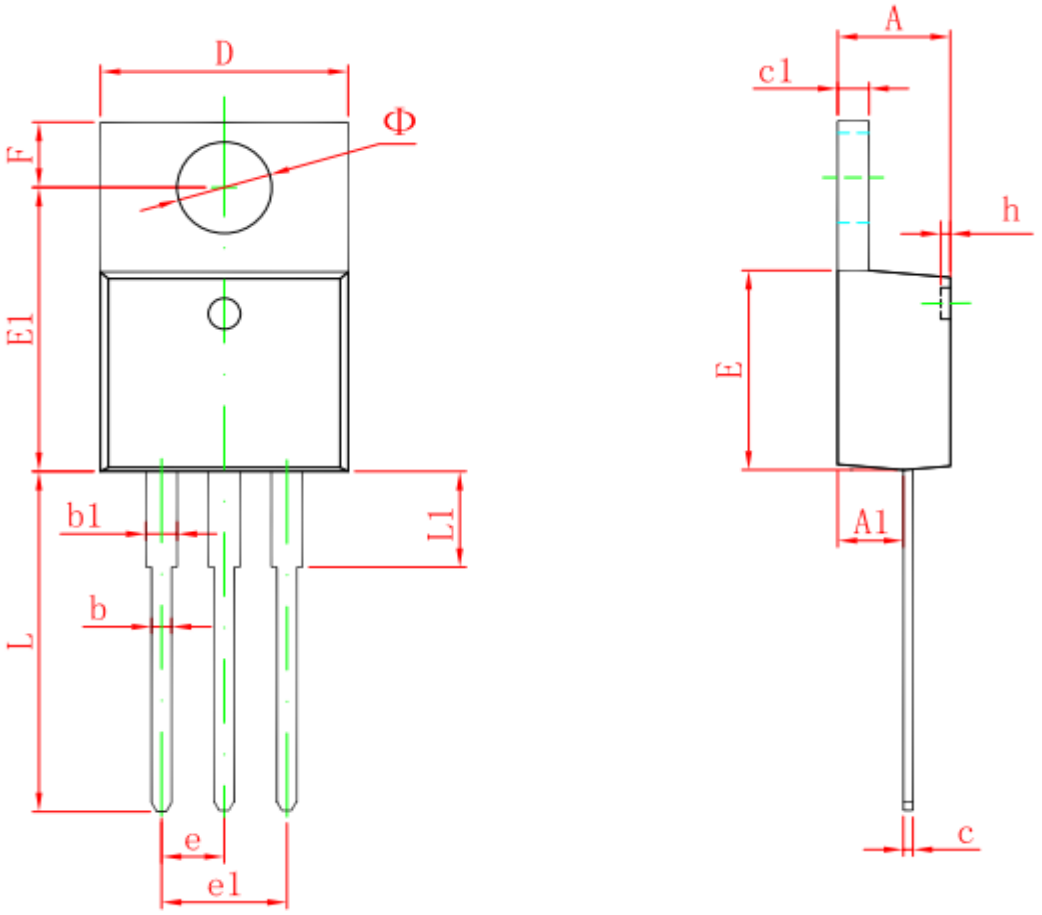


Peak Diode Recovery dv/dt Test Circuit



Peak Diode Recovery dv/dt Waveforms

6、TO-220 mechanical data



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155