

TOSHIBA POWER MOS FET MODULE SILICON N & P CHANNEL MOS TYPE (L²-π-MOSIV 6 IN 1)

MP6801

HIGH POWER, HIGH SPEED SWITCHING APPLICATIONS.

3-PHASE MOTOR DRIVE AND BIPOLAR DRIVE OF PULSE MOTOR.

- 4-Volt Gate Drive.
- Package with Heat Sink Isolated to Lead. (SIP 12Pin)
- High Drain Power Dissipation.
: P_T=40W @T_c=25°C (6 Device Operation)
- Low Drain-Source ON Resistance
: R_{DS(ON)}=55mΩ (Typ.) (N-ch)
90mΩ (Typ.) (P-ch)
- Low Leakage Current : I_{GSS}= ±10μA (Max.) @V_{DS}= ±16V
: I_{DSS}=100μA (Max.) @V_{DS}=60V
- Enhancement-Mode : V_{th}=0.8~2.0V @I_D=1mA

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING		UNIT
		N-ch	P-ch	
Drain-Source Voltage	V _{DS}	60	-60	V
Gate-Source Voltage	V _{GSS}	±20	±20	V
Drain Current	I _D	10	-10	A
Peak Drain Current	I _{DP}	30	-30	
Drain Power Dissipation (1 Device Operation, Ta = 25°C)	P _D	3.0		W
Drain Power Dissipation (6 Devices Operation)	P _T	Ta = 25°C	5.0	W
		Tc = 25°C	40	
Channel Temperature	T _{ch}	150		°C
Storage Temperature Range	T _{stg}	-55~150		°C

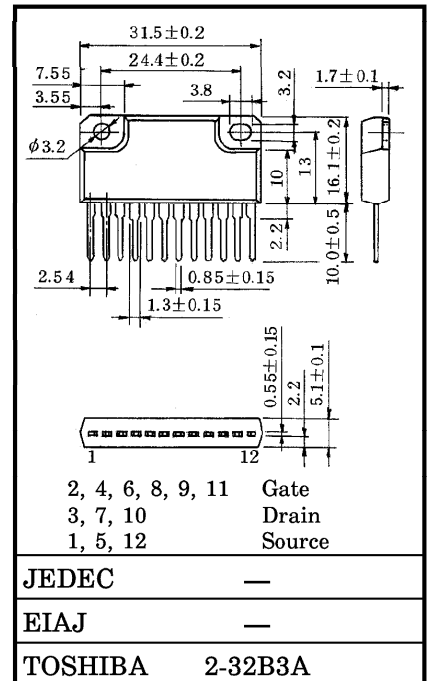
THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Junction to Ambient (6 Devices Operation, Ta = 25°C)	ΣR _{th(j-a)}	25	°C / W
Thermal Resistance of Junction to Case (6 Devices Operation, Tc = 25°C)	ΣR _{th(j-c)}	3.12	°C / W
Maximum Lead Temperature for Soldering Purposes (3.2mm from Case for 10s)	T _L	260	°C

This transistor is an electrostatic sensitive device. Please handle with caution.

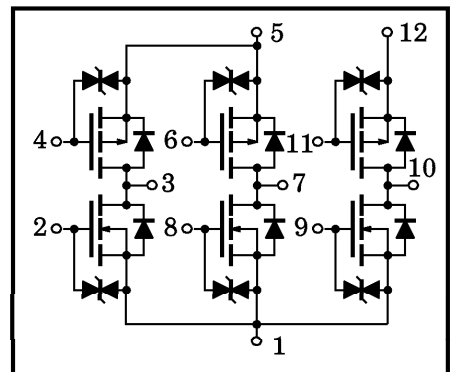
INDUSTRIAL APPLICATIONS

Unit in mm

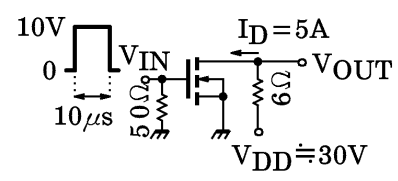


Weight : 6g

ARRAY CONFIGURATION



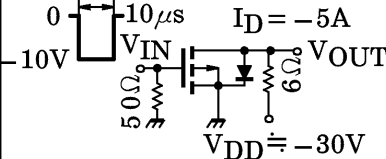
ELECTRICAL CHARACTERISTICS (Ta = 25°C) (N-ch MOS FET)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 60V, V_{GS} = 0$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0$	60	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	0.8	—	2.0	V
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 5A$	5	11	—	S
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 5A, V_{GS} = 4V$	—	80	115	m Ω
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 5A, V_{GS} = 10V$	—	55	80	
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0, f = 1MHz$	—	750	—	pF
Reverse Transfer Capacitance		C_{rss}		—	170	—	
Output Capacitance		C_{oss}		—	450	—	
Switching Time	Rise Time	t_r	 <p>$V_{IN} : t_r, t_f < 5ns$ $Du. \leq 1\% (Z_{OUT} = 50\Omega)$</p>	—	60	—	ns
	Turn-on Time	t_{on}		—	80	—	
	Fall Time	t_f		—	150	—	
	Turn-off Time	t_{off}		—	400	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$I_D = 10A, V_{GS} = 10V$ $V_{DD} = 48V$	—	30	—	nC
Gate-Source Charge		Q_{gs}		—	20	—	
Gate-Drain (“Miller”) Charge		Q_{gd}		—	10	—	

SOURCE-DRAIN DIODE RATING AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain Reverse Current	I_{DR}	—	—	—	-10	A
Peak Drain Reverse Current	I_{DRP}	—	—	—	-30	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 10A, V_{GS} = 0$	—	-1.0	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 10A, V_{GS} = 0$	—	110	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = -50A / \mu s$	—	0.27	—	μC

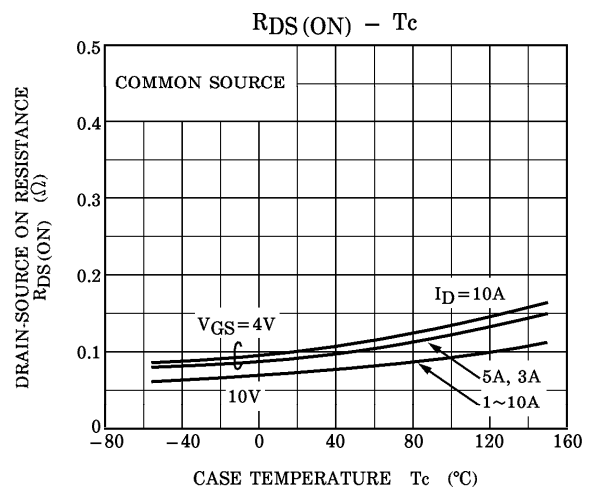
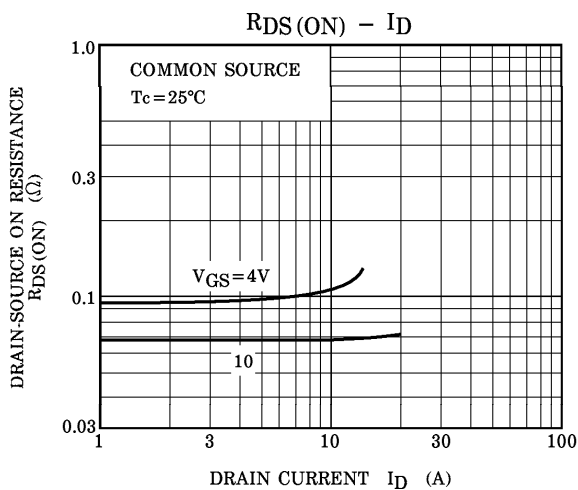
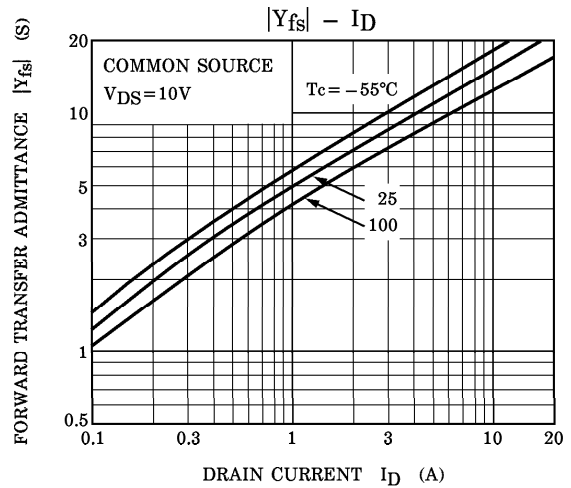
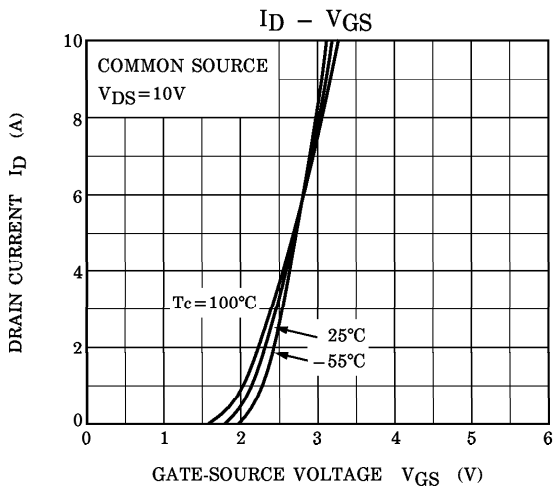
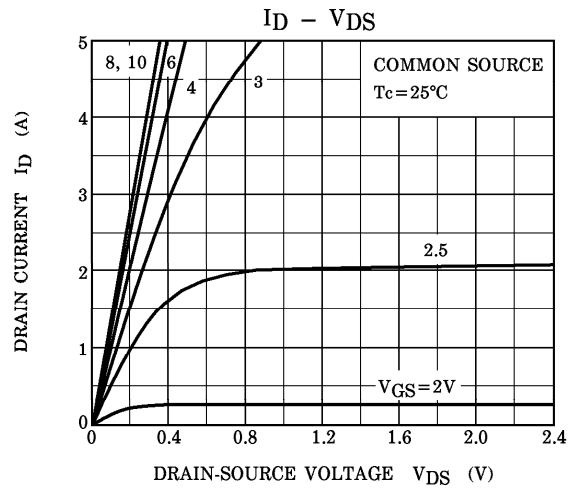
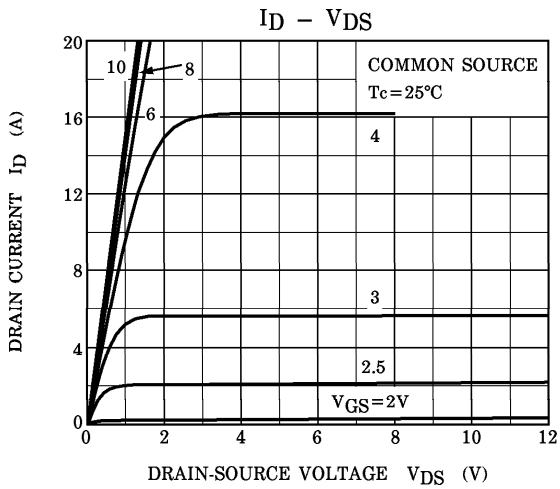
ELECTRICAL CHARACTERISTICS (Ta = 25°C) (P-ch MOS FET)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = -60V, V_{GS} = 0$	—	—	-100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = -10mA, V_{GS} = 0$	-60	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = -10V, I_D = -1mA$	-0.8	—	-2.0	V
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = -10V, I_D = -5A$	3.5	8.0	—	S
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = -5A, V_{GS} = -4V$	—	145	200	m Ω
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = -5A, V_{GS} = -10V$	—	90	125	
Input Capacitance		C_{iss}	$V_{DS} = -10V, V_{GS} = 0,$ $f = 1MHz$	—	1200	—	pF
Reverse Transfer Capacitance		C_{rss}		—	220	—	
Output Capacitance		C_{oss}		—	550	—	
Switching Time	Rise Time	t_r		—	60	—	ns
	Turn-on Time	t_{on}		—	80	—	
	Fall Time	t_f		—	120	—	
	Turn-off Time	t_{off}		$V_{IN} : t_r, t_f < 5ns$ $Du \leq 1\% (Z_{OUT} = 50\Omega)$	—	350	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$I_D = -10A, V_{GS} = -10V$ $V_{DD} = -48V$	—	45	—	nC
Gate-Source Charge		Q_{gs}		—	30	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	15	—	

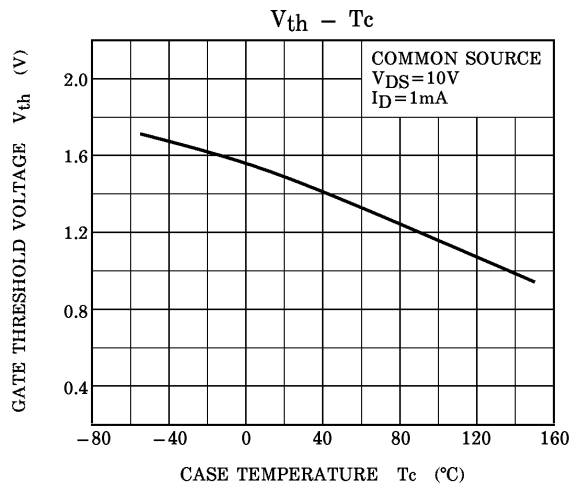
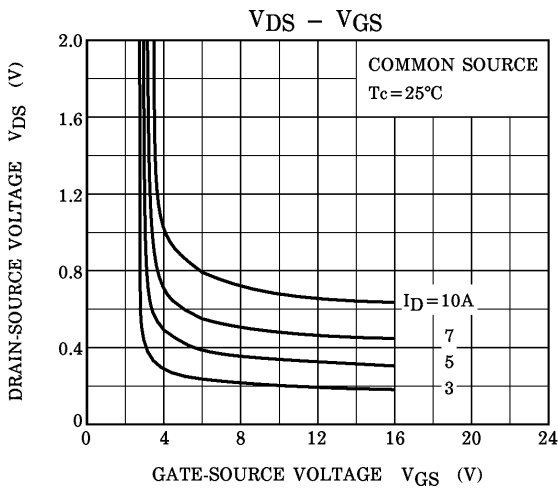
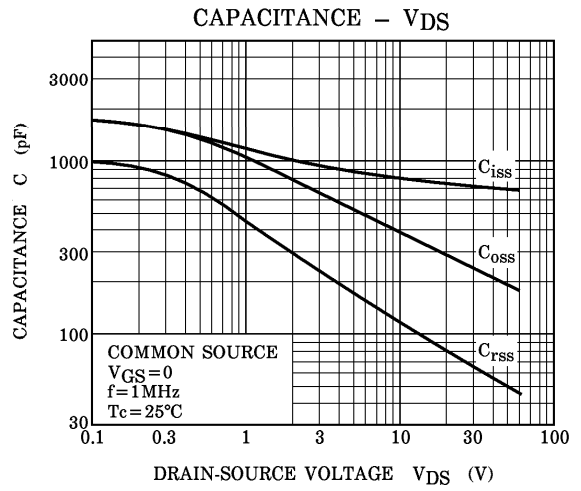
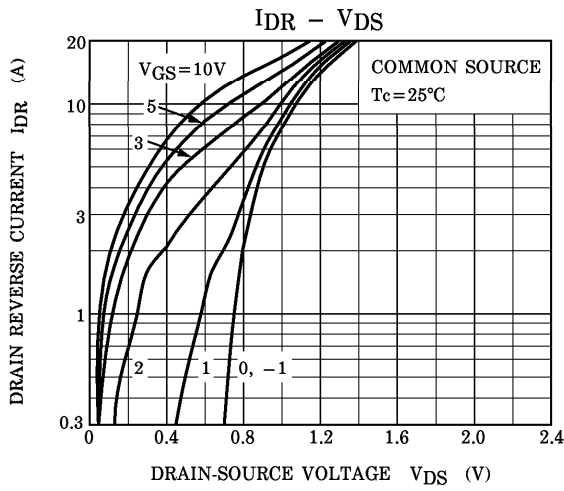
SOURCE-DRAIN DIODE RATING AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain Reverse Current	I_{DR}	—	—	—	-10	A
Peak Drain Reverse Current	I_{DRP}	—	—	—	-30	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = -10A, V_{GS} = 0$	—	-0.9	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = -10A, V_{GS} = 0$	—	110	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 50A / \mu s$	—	0.18	—	μC

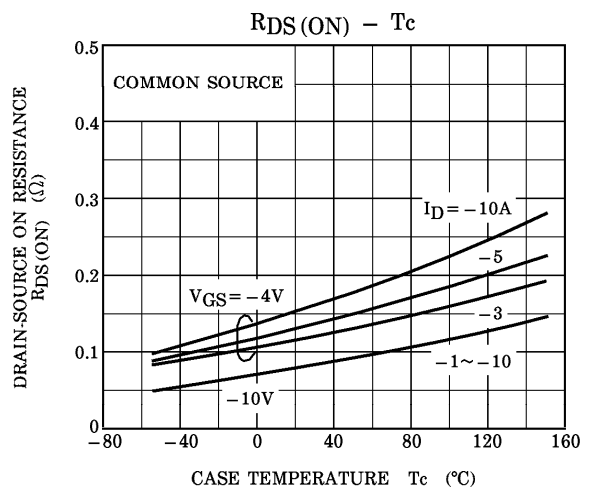
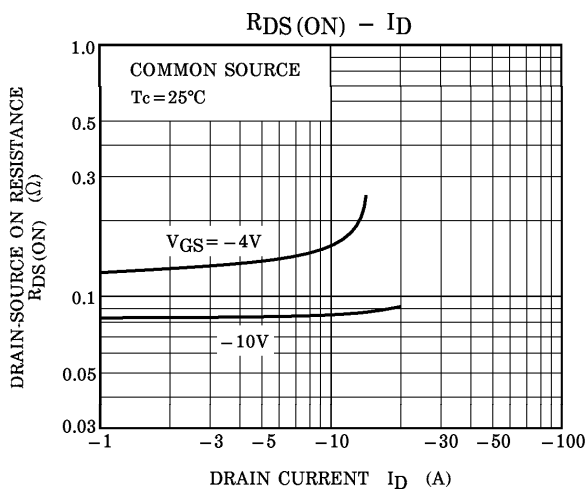
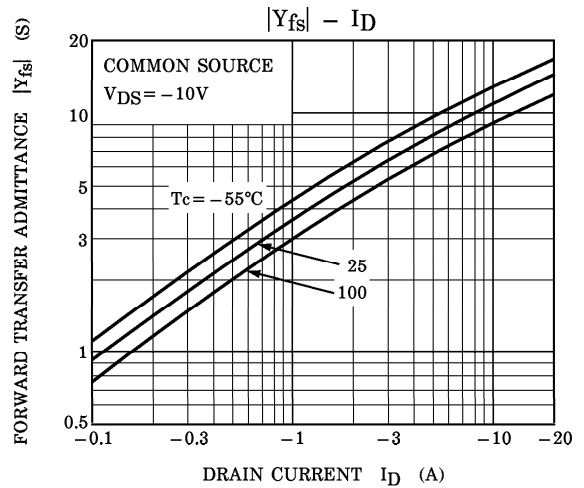
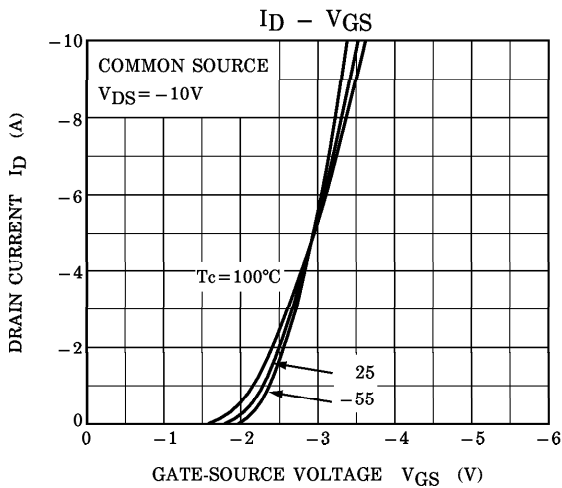
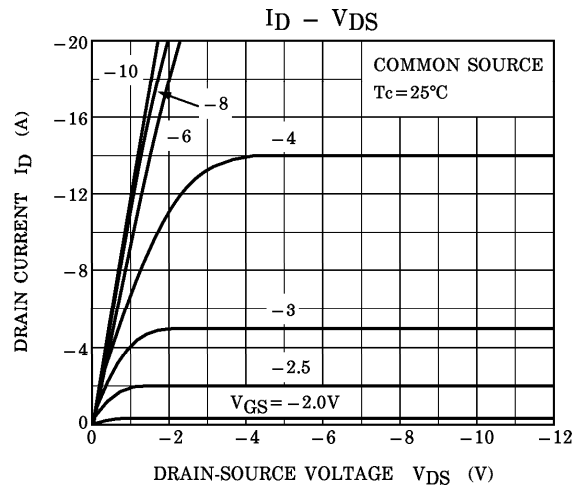
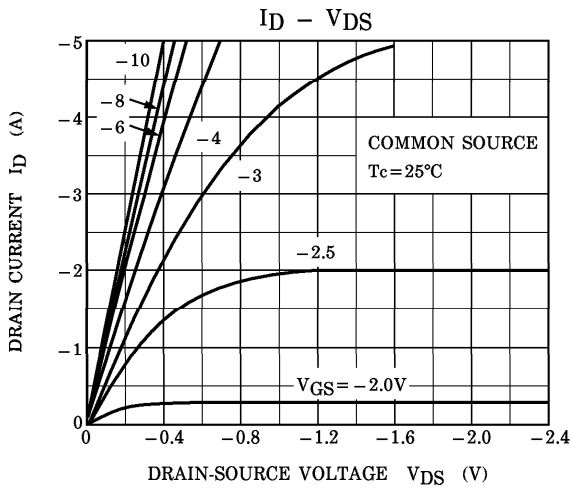
N-ch



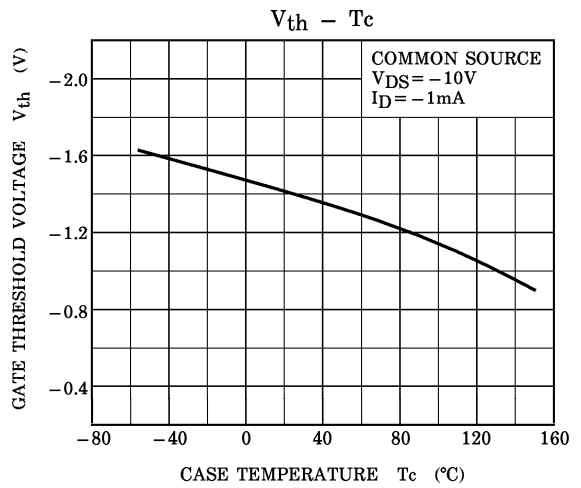
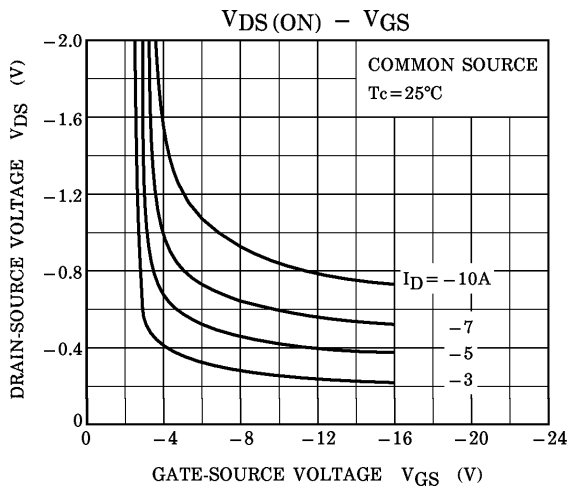
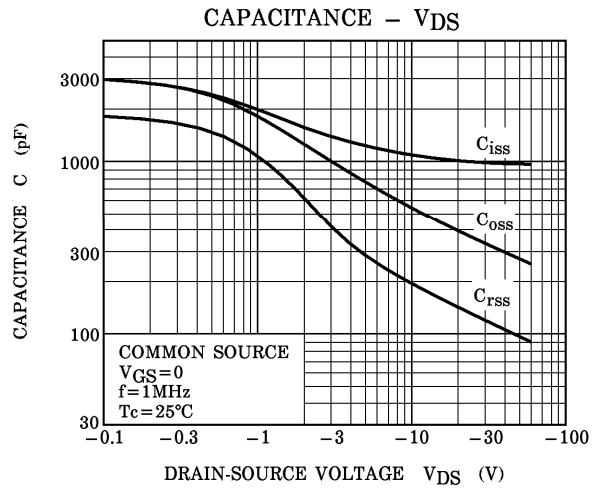
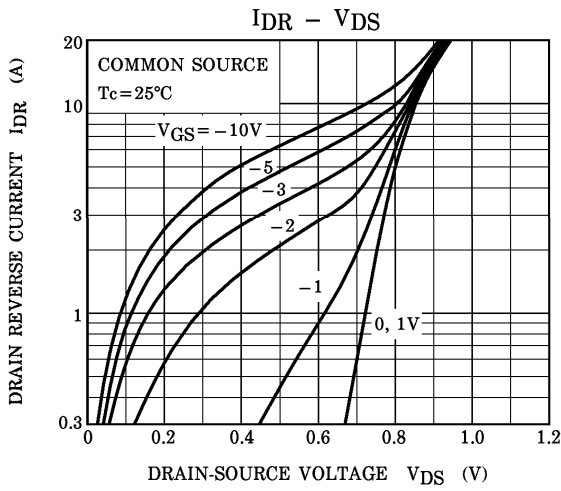
N-ch

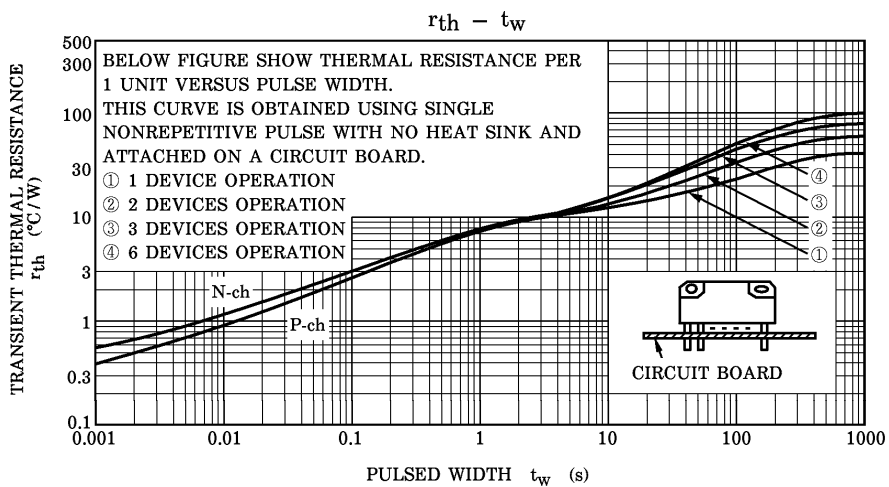
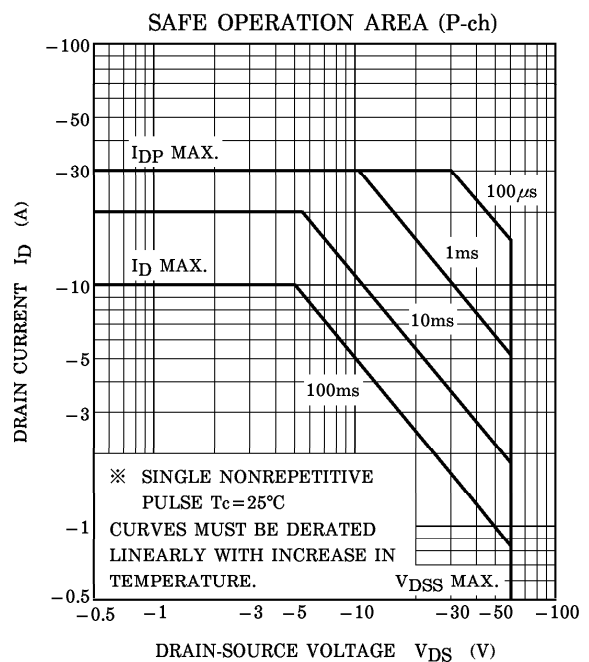
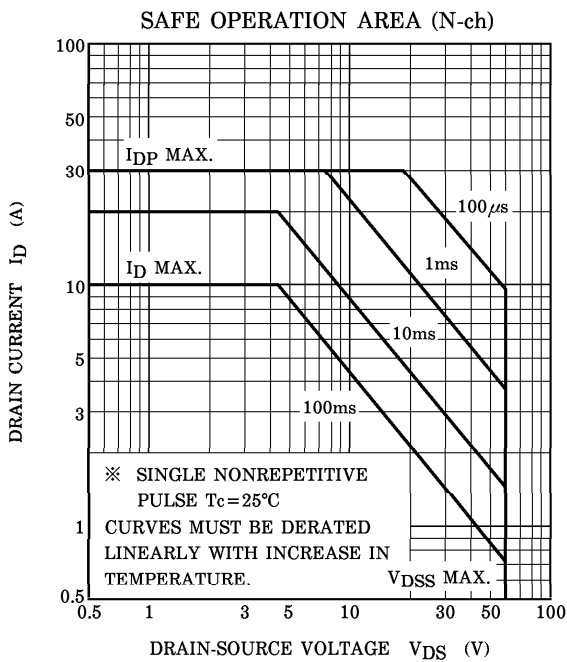


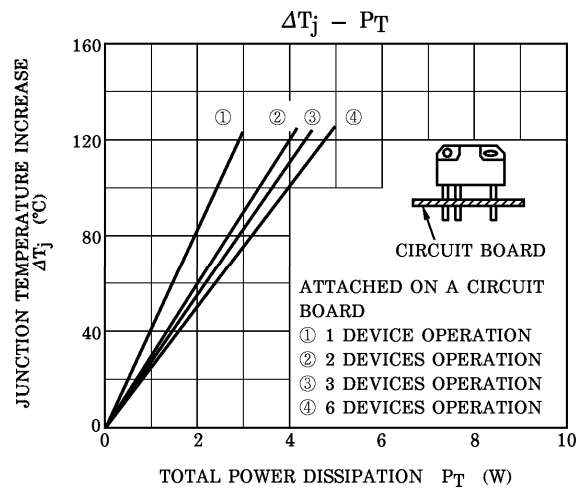
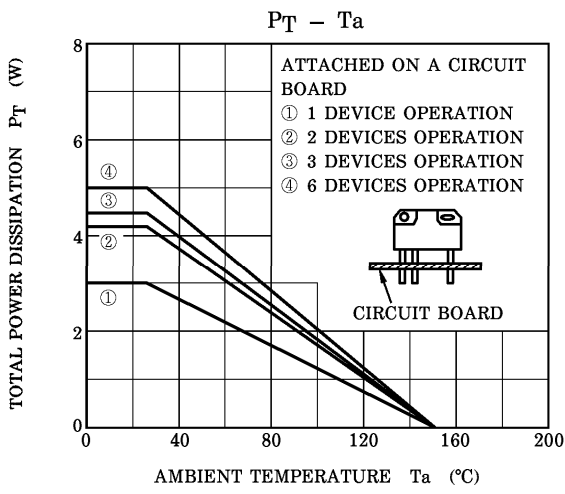
P-ch



P-ch







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