

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L²-π-MOSV)

2SJ377

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
 RELAY DRIVE, DC-DC CONVERTER AND MOTOR DRIVE
 APPLICATIONS

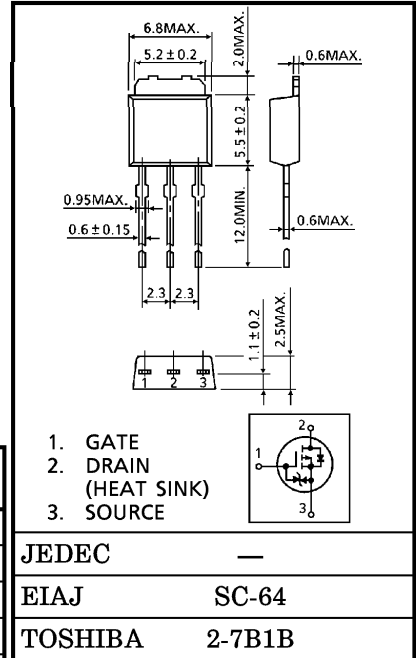
INDUSTRIAL APPLICATIONS

Unit in mm

- 4V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.16\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 4.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = -60V$)
- Enhancement-Mode : $V_{th} = -0.8 \sim -2.0V$
 ($V_{DS} = -10V, I_D = -1mA$)

MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-60	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	-60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	-5	A
	Pulse	I_{DP}	-20	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	20	W
Single Pulse Avalanche Energy**		E_{AS}	273	mJ
Avalanche Current		I_{AR}	-5	A
Repetitive Avalanche Energy*		E_{AR}	2	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55~150	$^\circ C$



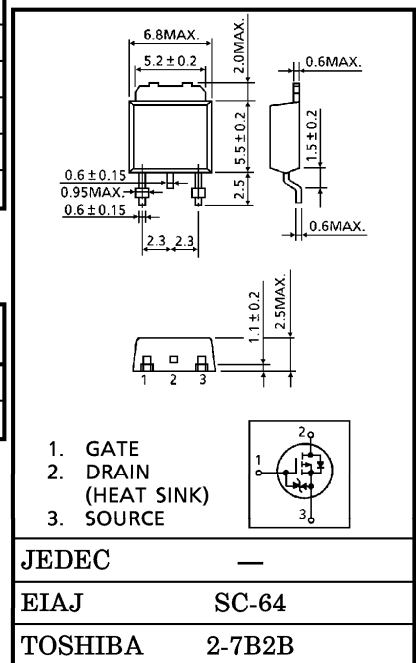
THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	6.25	$^\circ C / W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	125	$^\circ C / W$

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD} = -25V$, Starting $T_{ch} = 25^\circ C$, $L = 14.84mH$, $R_G = 25\Omega$, $I_{AR} = -5A$

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



Weight : 0.35g

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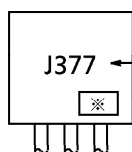
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±16V, VDS = 0V	—	—	±10	μA
Drain Cut-off Current		IDSS	VDS = -60V, VGS = 0V	—	—	-100	μA
Drain-Source Breakdown Voltage		V (BR) DSS	ID = -10mA, VGS = 0V	-60	—	—	V
Gate Threshold Voltage		Vth	VDS = -10V, ID = -1mA	-0.8	—	-2.0	V
Drain-Source ON Resistance		RDS (ON)	VGS = -4V, ID = -2.5A	—	0.24	0.28	Ω
			VGS = -10V, ID = -2.5A	—	0.16	0.19	
Forward Transfer Admittance		Yfs	VDS = -10V, ID = -2.5A	2.0	4.0	—	S
Input Capacitance		Ciss	VDS = -10V, VGS = 0V f = 1MHz	—	630	—	pF
Reverse Transfer Capacitance		Crss		—	95	—	
Output Capacitance		Coss		—	290	—	
Switching Time	Rise Time	tr		—	25	—	ns
	Turn-on Time	ton		—	45	—	
	Fall Time	tf		—	55	—	
	Turn-off Time	t _{off}		VIN : tr, tf < 5ns Duty ≤ 1%, tw = 10μs	—	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = -48V, VGS = -10V	—	22	—	nC
Gate-Source Charge		Qgs	ID = -5A	—	16	—	
Gate-Drain ("Miller") Charge		Qgd		—	6	—	

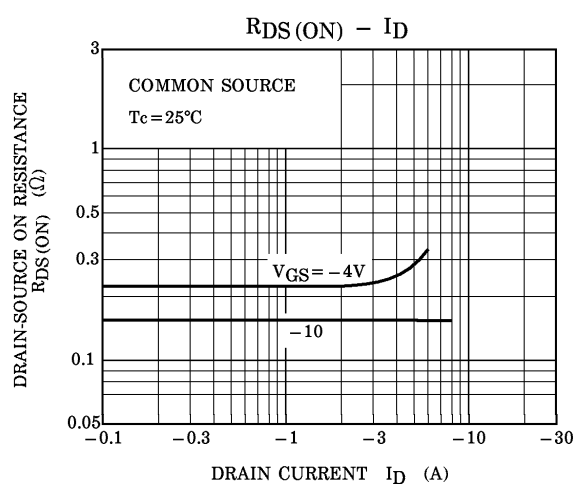
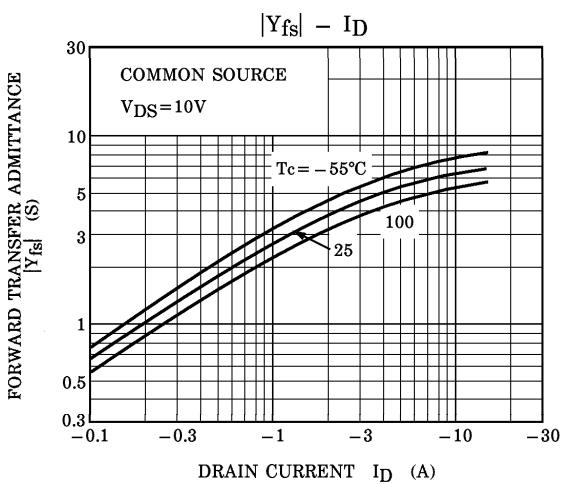
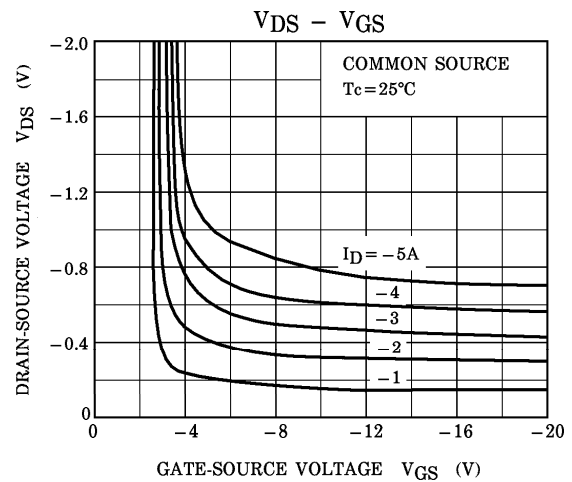
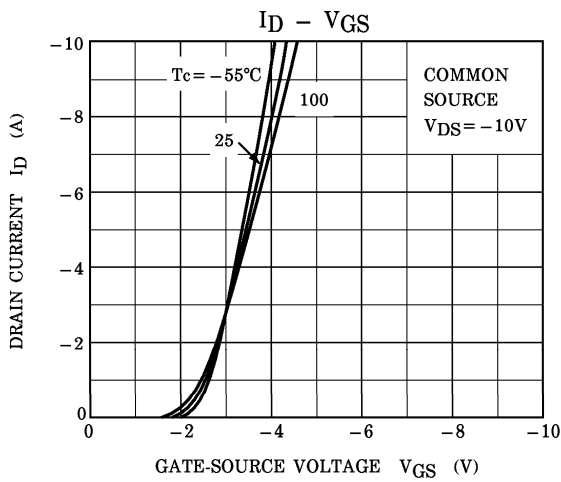
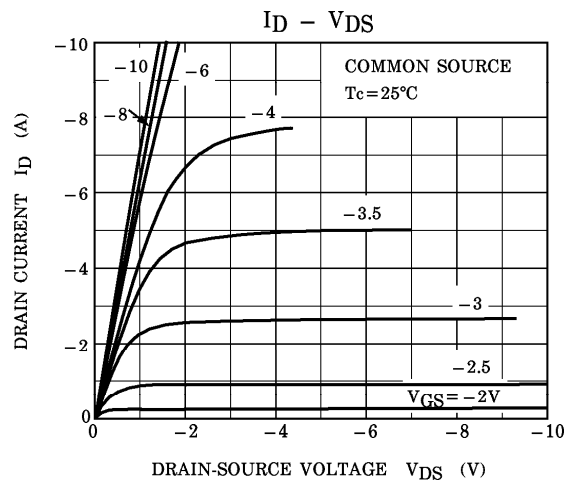
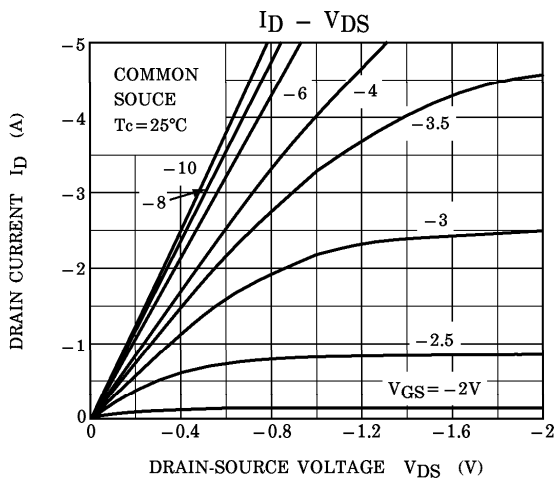
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

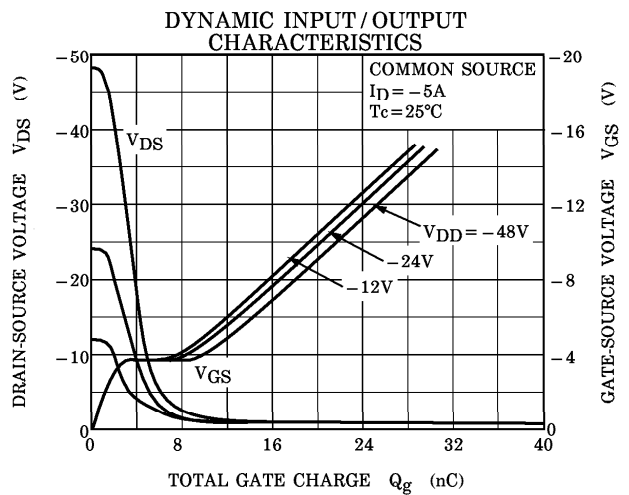
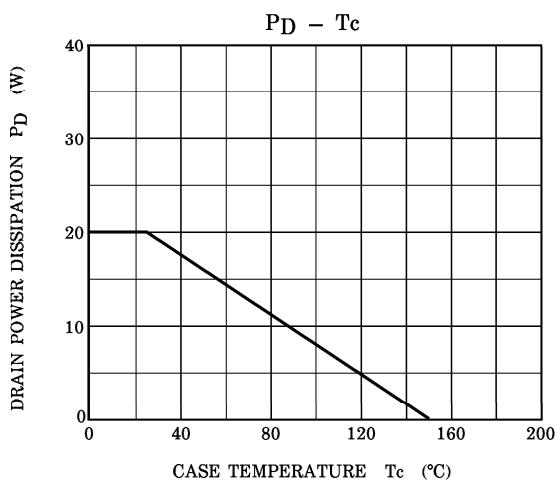
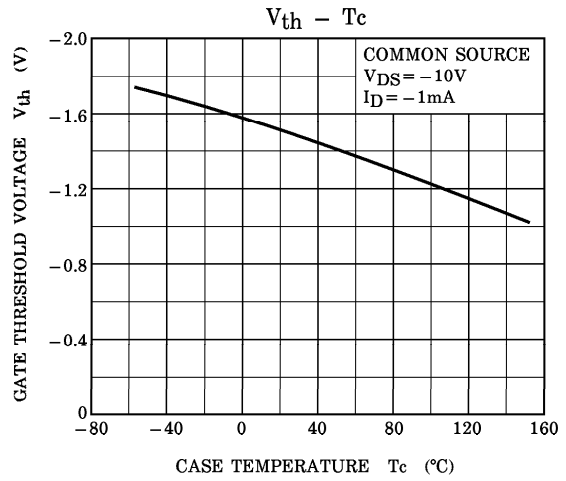
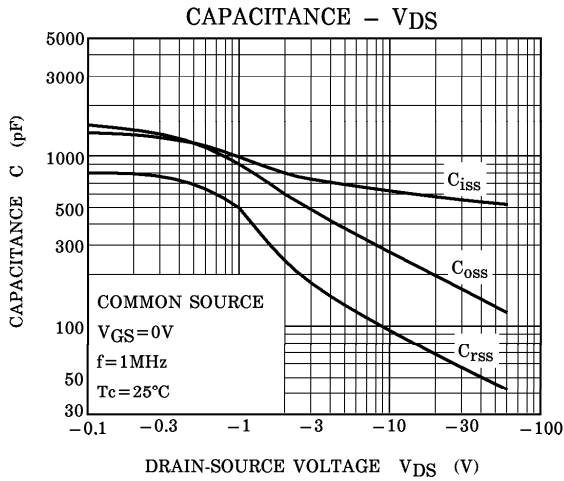
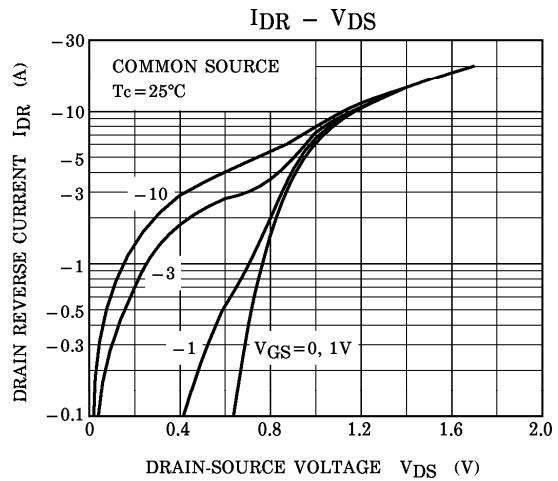
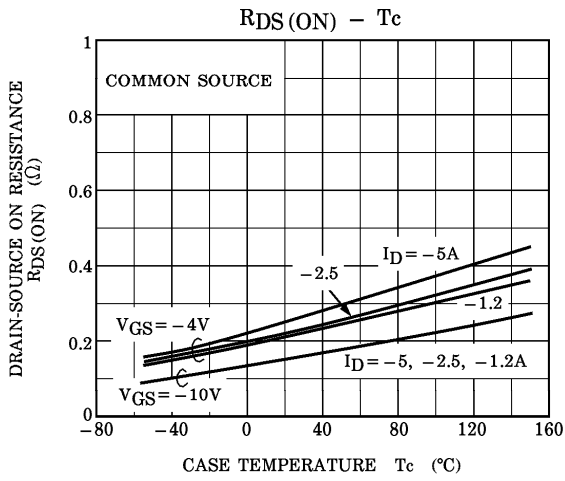
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	-5	A
Pulse Drain Reverse Current	IDRP	—	—	—	-20	A
Diode Forward Voltage	VDSF	IDR = -5A, VGS = 0V	—	—	1.7	V
Reverse Recovery Time	t _{rr}	IDR = -5A, VGS = 0V	—	80	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 50A / μs	—	0.1	—	μC

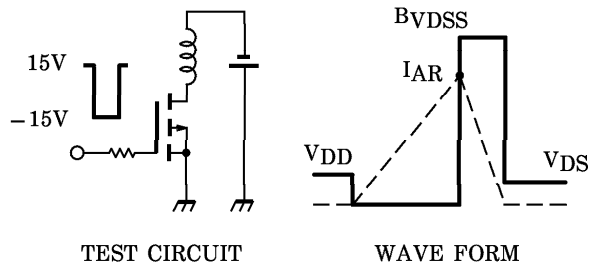
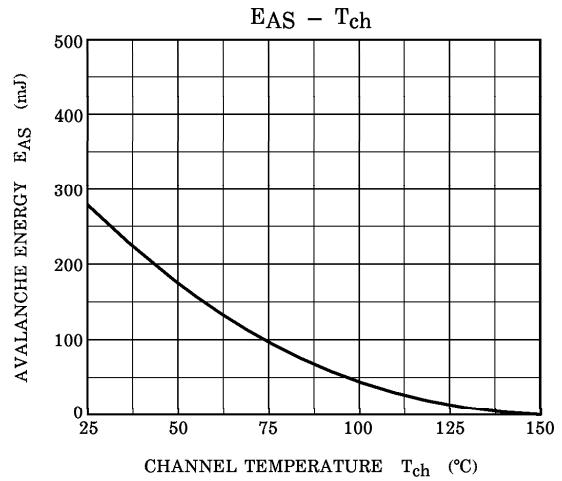
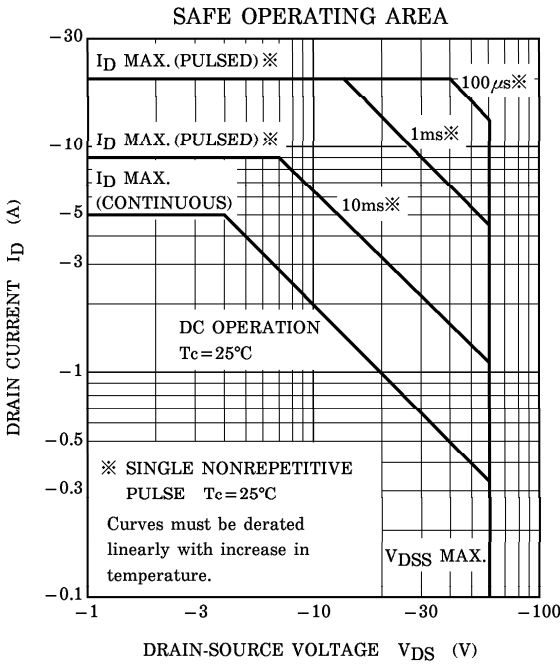
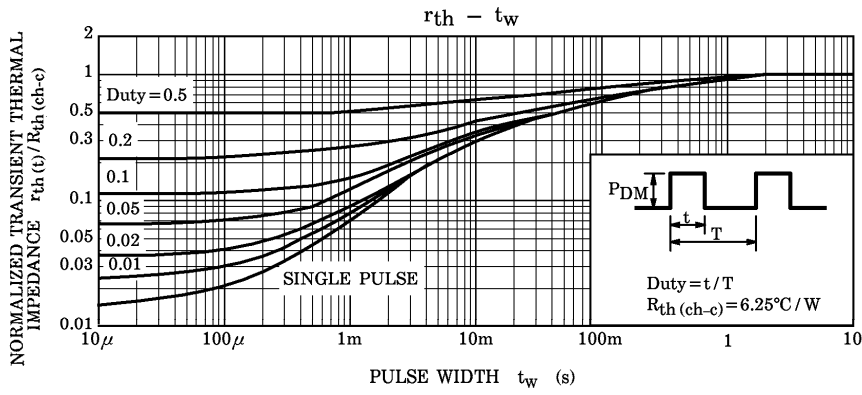
MARKING



TYPE ← J377
 ※ Lot Number
 □ □ — Month (Starting from Alphabet A)
 — Year (Last Number of the Christian Era)







Peak IAR = -5A, $R_G = 25\Omega$
 $V_{DD} = -25V$, $L = 14.84mH$

$$E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$$