

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

2SJ380

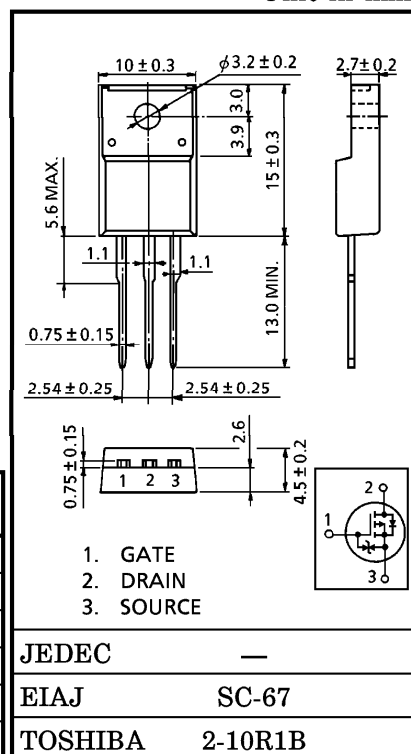
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
 RELAY DRIVE, DC-DC CONVERTER AND MOTOR DRIVE
 APPLICATIONS

INDUSTRIAL APPLICATIONS
 Unit in mm

- 4 V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.15 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 7.7 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100 \mu A$ (Max.) ($V_{DS} = -100 V$)
- Enhancement-Mode : $V_{th} = -0.8 \sim -2.0 V$
 ($V_{DS} = -10 V, I_D = -1 mA$)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-100	V
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)		V_{DGR}	-100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	-12	A
	Pulse	I_{DP}	-48	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	35	W
Single Pulse Avalanche Energy**		E_{AS}	312	mJ
Avalanche Current		I_{AR}	-12	A
Repetitive Avalanche Energy*		E_{AR}	3.5	mJ
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C



Weight : 1.9 g

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THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	3.57	°C/W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	°C/W

Note ;

* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = -25\text{ V}$, $T_{ch} = 25^\circ\text{C}$ (initial), $L = 2.94\text{ mH}$, $R_G = 25\ \Omega$,
 $I_{AR} = -12\text{ A}$

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

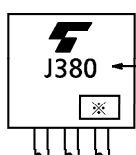
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V	—	—	±10	μA
Drain Cut-off Current	I _{DSS}	V _{DS} = -100 V, V _{GS} = 0 V	—	—	-100	μA
Drain-Source Breakdown Voltage	V _{(BR) DSS}	I _D = -10 mA, V _{GS} = 0 V	-100	—	—	V
Gate Threshold Voltage	V _{th}	V _{DS} = -10 V, I _D = -1 mA	-0.8	—	-2.0	V
Drain-Source ON Resistance	R _{DS (ON)}	V _{GS} = -4 V, I _D = -6 A	—	0.25	0.32	Ω
		V _{GS} = -10 V, I _D = -6 A	—	0.15	0.21	
Forward Transfer Admittance	Y _{fs}	V _{DS} = -10 V, I _D = -6 A	4.5	7.7	—	S
Input Capacitance	C _{iss}	V _{DS} = -10 V, V _{GS} = 0 V f = 1 MHz	—	1100	—	pF
Reverse Transfer Capacitance	C _{rss}		—	200	—	
Output Capacitance	C _{oss}		—	440	—	
Switching Time	Rise Time	t _r		—	18	ns
	Turn-on Time	t _{on}		—	30	
	Fall Time	t _f		—	18	
	Turn-off Time	t _{off}		V _{IN} : t _r , t _f < 5 ns Duty ≤ 1%, t _w = 10 μs	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} ≐ -80 V, V _{GS} = -10 V	—	48	—	nC
Gate-Source Charge	Q _{gs}	I _D = -12 A	—	29	—	
Gate-Drain ("Miller") Charge	Q _{gd}		—	19	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	-12	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	-48	A
Diode Forward Voltage	V _{DSSF}	I _{DR} = -12 A, V _{GS} = 0 V	—	—	1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = -12 A, V _{GS} = 0 V dI _{DR} /dt = 50 A/μs	—	160	—	ns
Reverse Recovery Charge	Q _{rr}		—	0.5	—	μC

MARKING



TYPE

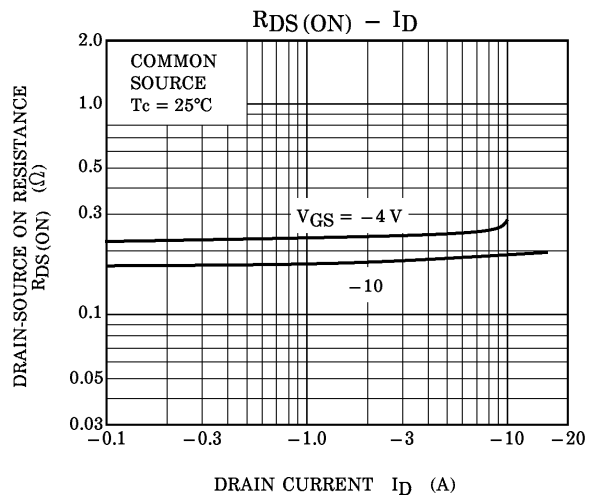
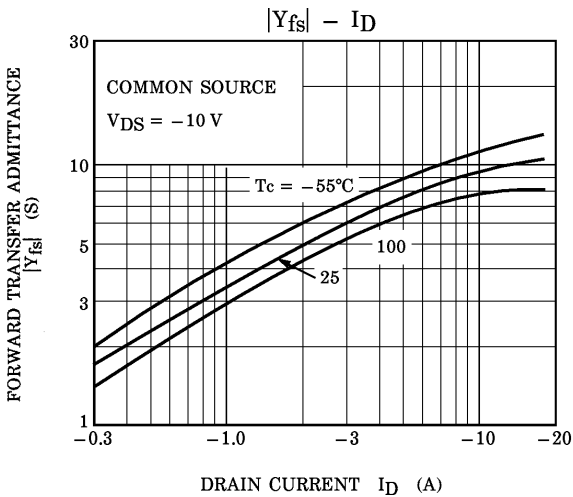
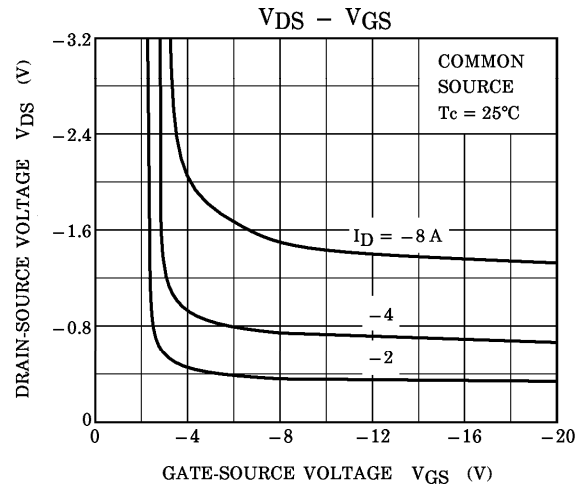
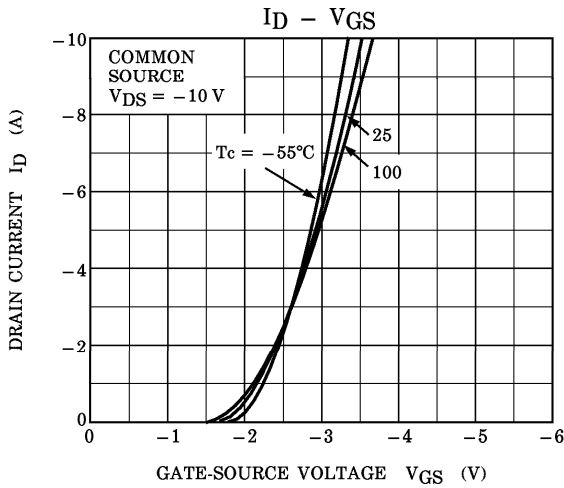
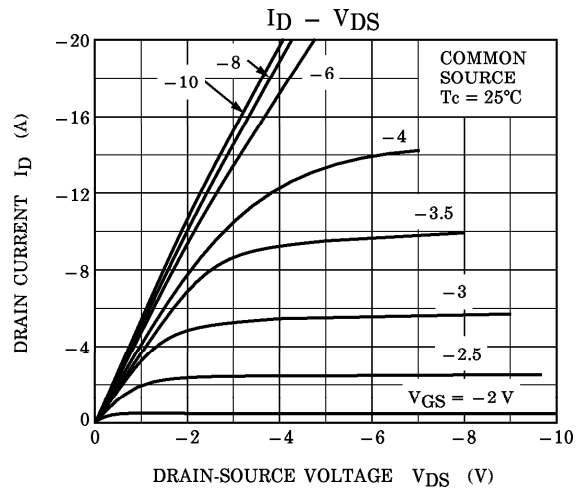
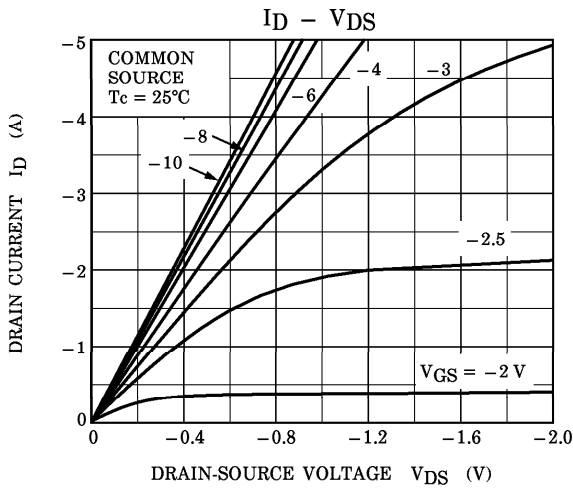
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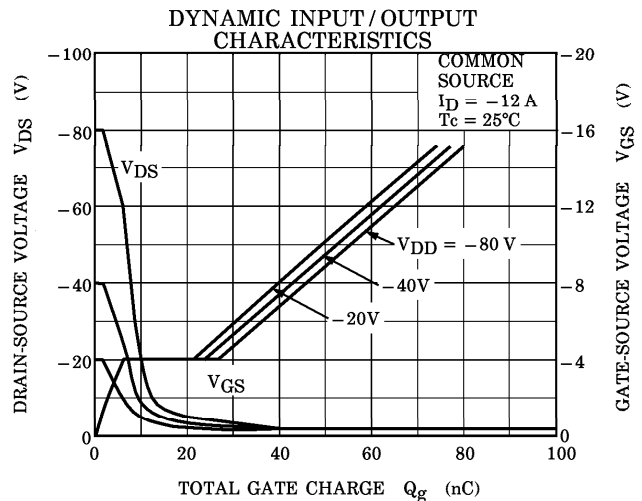
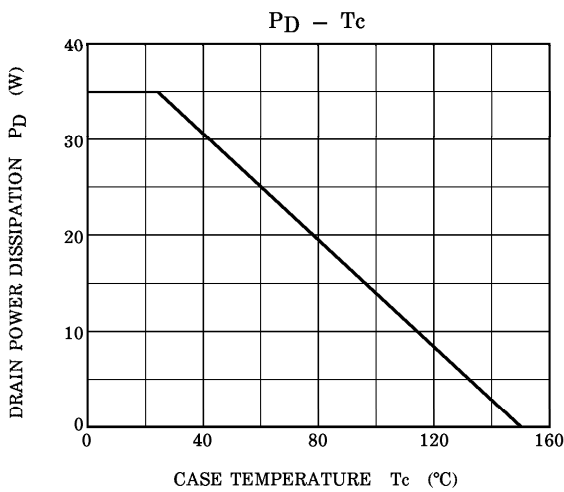
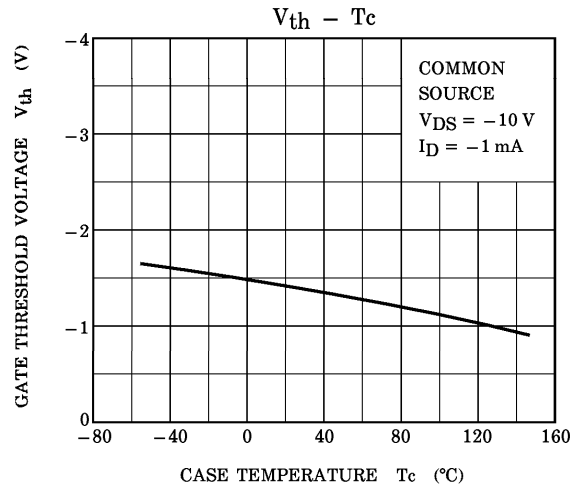
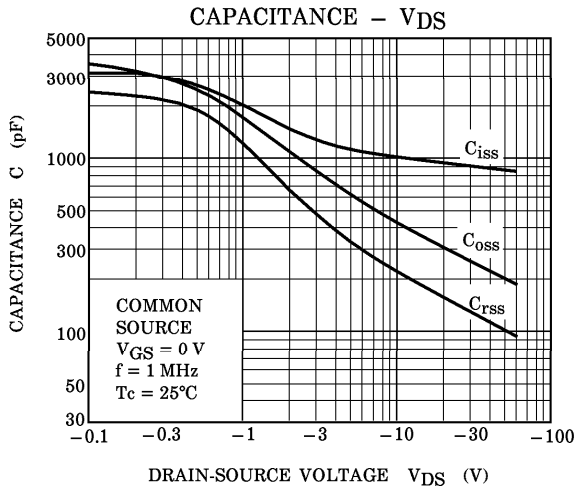
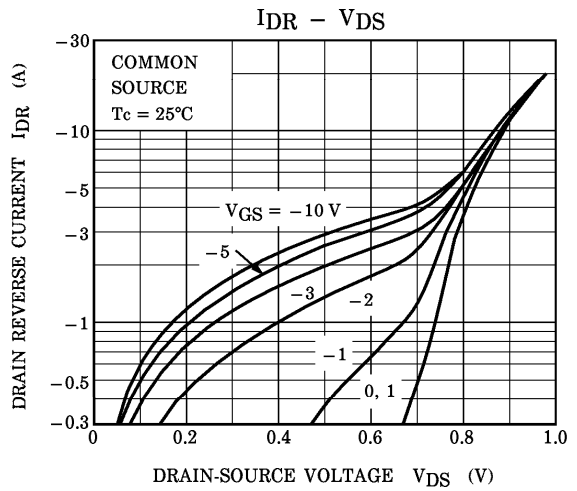
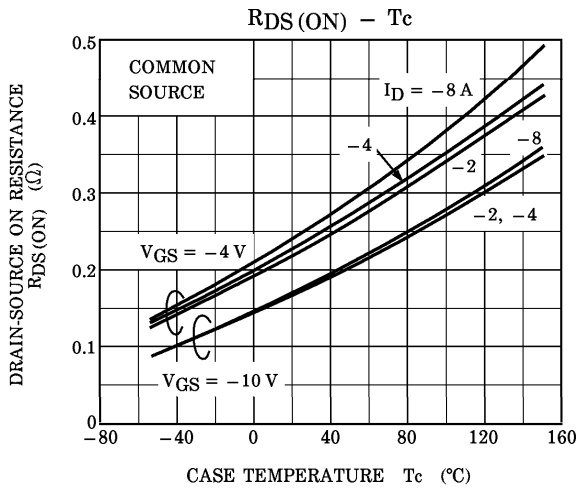


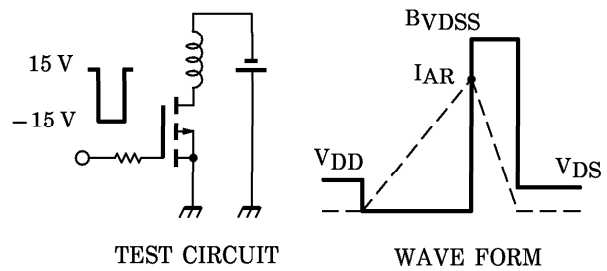
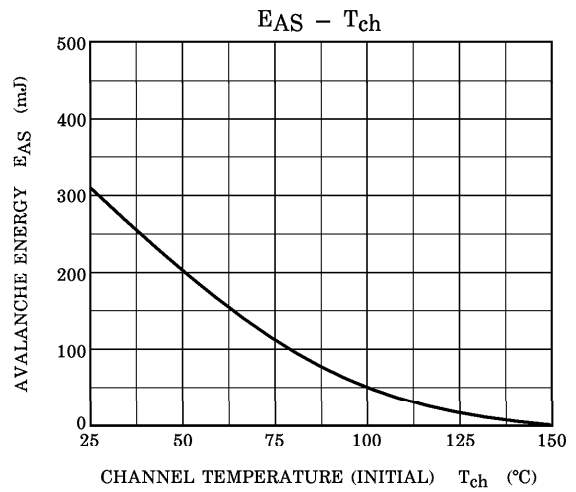
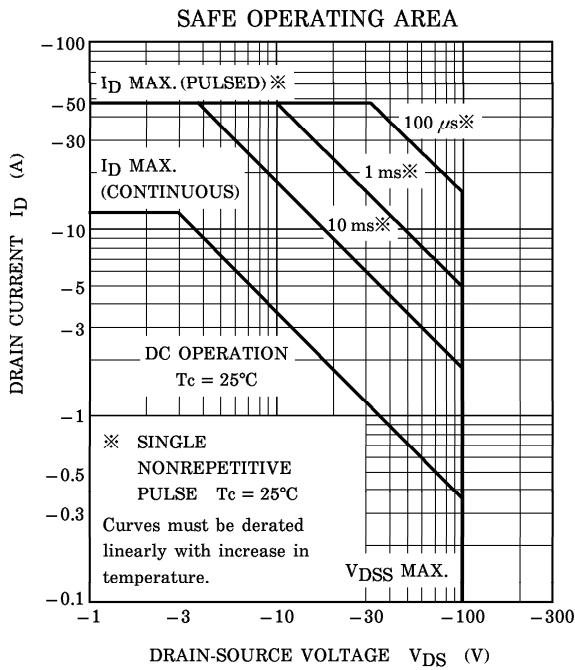
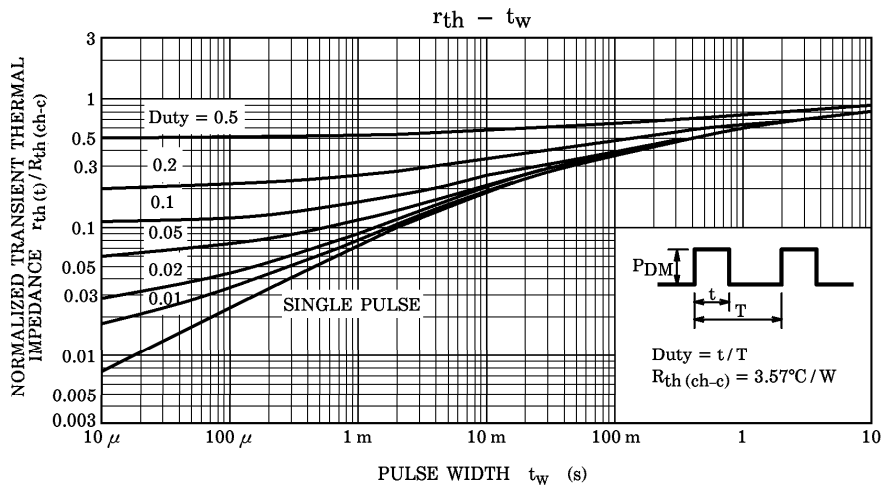
Month (Starting from Alphabet A)



Year (Last Number of the Christian Era)







Peak $I_{AR} = -12$ A, $R_G = 25 \Omega$
 $V_{DD} = -25$ V, $L = 2.94$ mH

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