

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

2SJ516

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

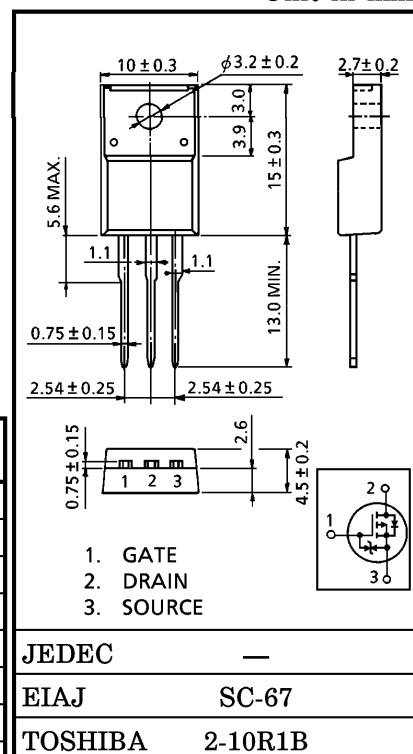
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.6 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 5.3 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100 \mu A$ ($V_{DS} = -250 V$)
- Enhancement-Mode : $V_{th} = -1.5 \sim -3.5 V$
($V_{DS} = -10 V$, $I_D = -1 mA$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	-250	V
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)	V_{DGR}	-250	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	-6.5
	Pulse	I_{DP}	-13
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	35	W
Single Pulse Avalanche Energy**	E_{AS}	157	mJ
Avalanche Current	I_{AR}	-6.5	A
Repetitive Avalanche Energy*	E_{AR}	3.5	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	$R_{th(ch-c)}$	3.57	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

Note ;

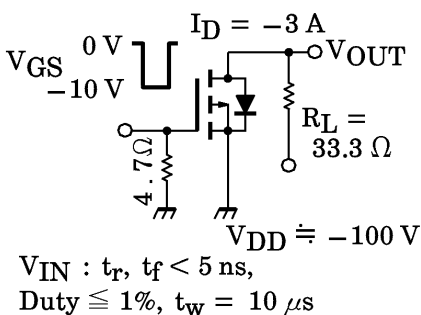
* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = -50 V$, $T_{ch} = 25^\circ C$ (initial), $L = 6.3 mH$, $R_G = 25 \Omega$, $I_{AR} = -6.5 A$ **This transistor is an electrostatic sensitive device.****Please handle with caution.**

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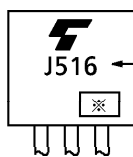
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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} = -250 V, V _{GS} = 0 V	—	—	-100	μA
Drain-Source Breakdown Voltage		V _(BR) DSS	I _D = -10 mA, V _{GS} = 0 V	-250	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = -10 V, I _D = -1 mA	-1.5	—	-3.5	V
Drain-Source ON Resistance		R _{DS(ON)}	V _{GS} = -10 V, I _D = -3 A	—	0.6	0.8	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} = -10 V, I _D = -3 A	2.5	5.3	—	S
Input Capacitance		C _{iss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1 MHz	—	1120	—	pF
Reverse Transfer Capacitance		C _{rss}		—	110	—	
Output Capacitance		C _{oss}		—	320	—	
Switching Time	Rise Time	t _r		—	17	—	ns
	Turn-on Time	t _{on}		—	34	—	
	Fall Time	t _f		—	6	—	
	Turn-off Time	t _{off}		—	71	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} = -200 V, V _{GS} = -10 V I _D = -6.5 A	—	29	—	nC
Gate-Source Charge		Q _{gs}		—	19	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	10	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	-6.5	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	-13	A
Diode Forward Voltage	V _{DSF}	I _{DR} = -6.5 A, V _{GS} = 0 V	—	—	2.0	V
Reverse Recovery Time	t _{rr}	I _{DR} = -6.5 A, V _{GS} = 0 V dI _{DR} /dt = 100 A/μs	—	190	—	ns
Reverse Recovery Charge	Q _{rr}		—	2.1	—	μC

MARKING



TYPE

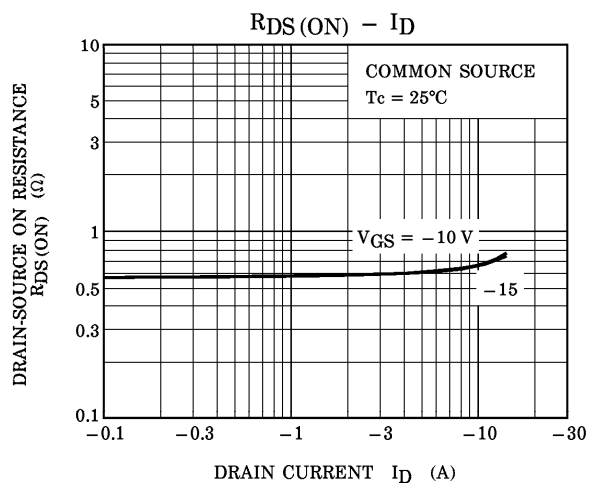
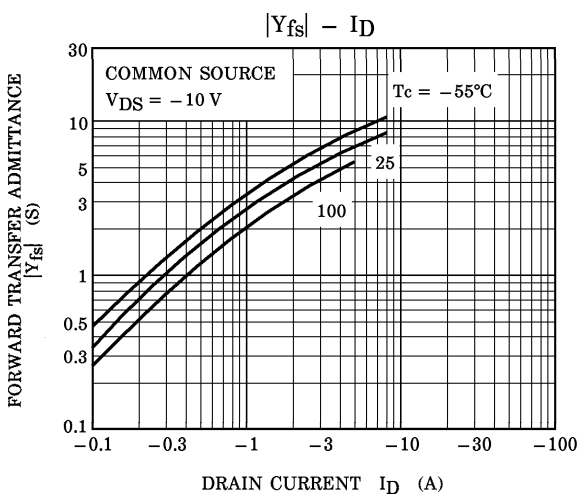
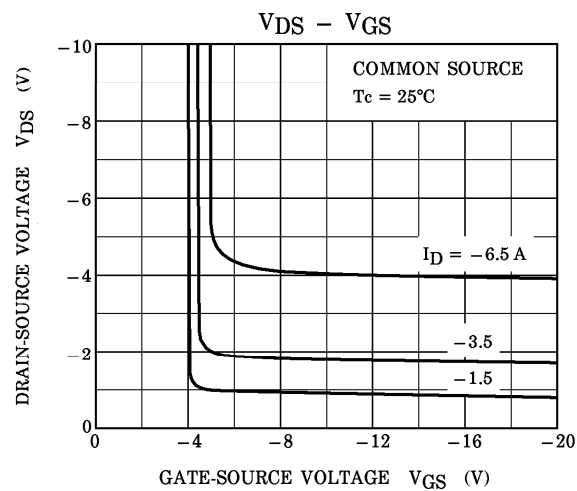
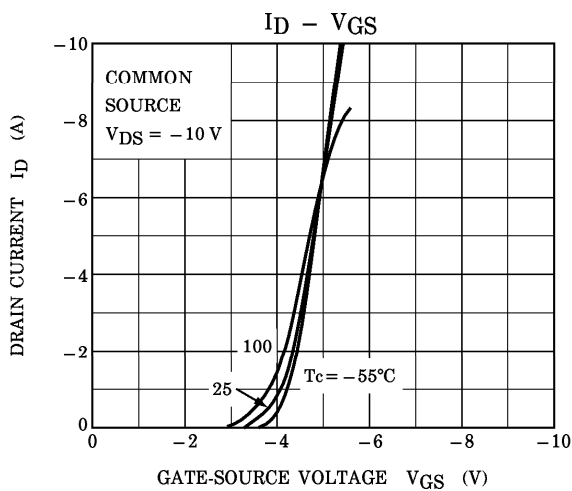
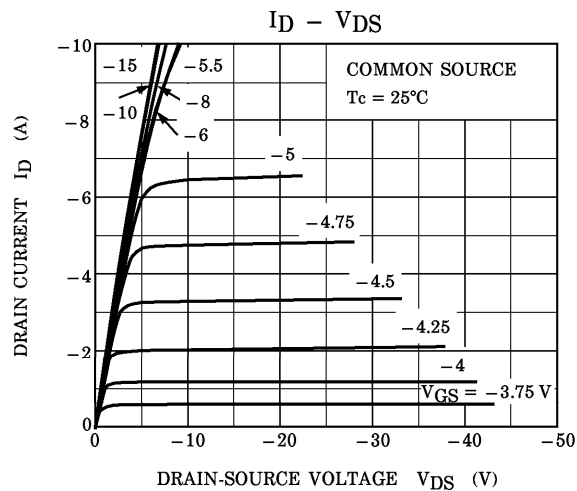
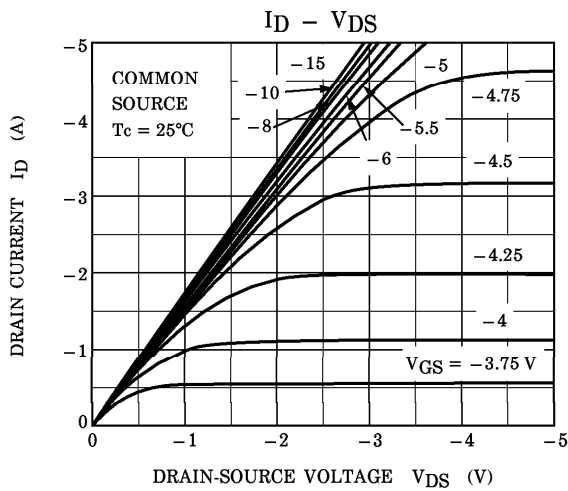
※ Lot Number

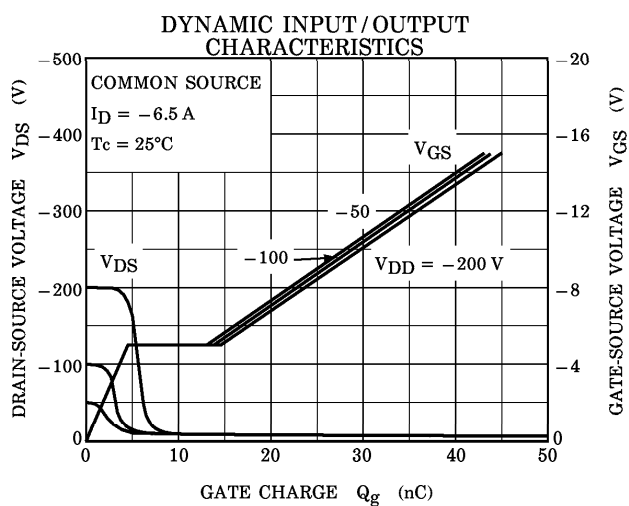
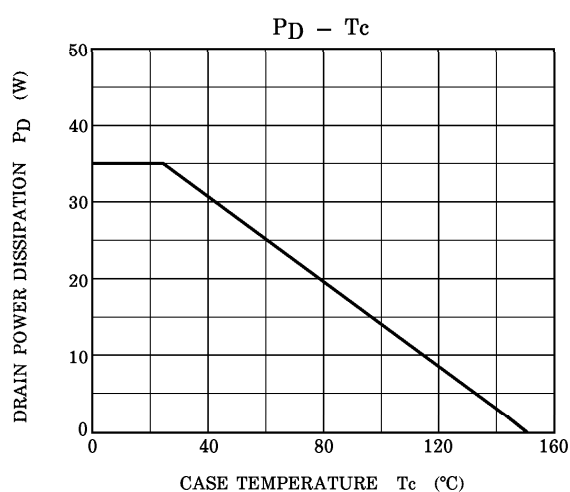
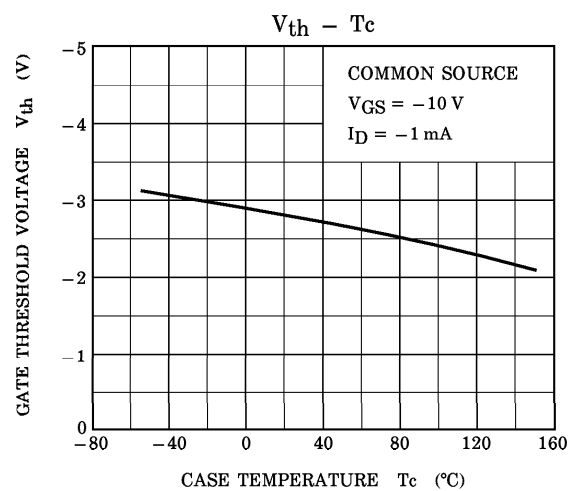
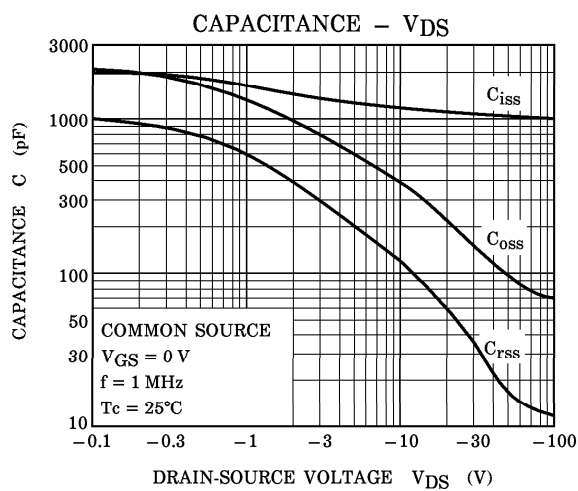
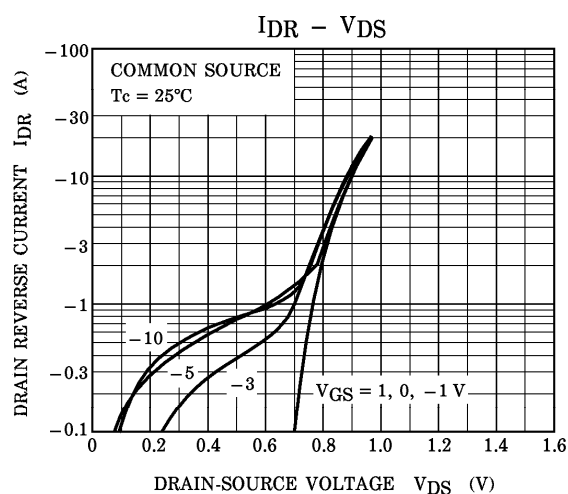
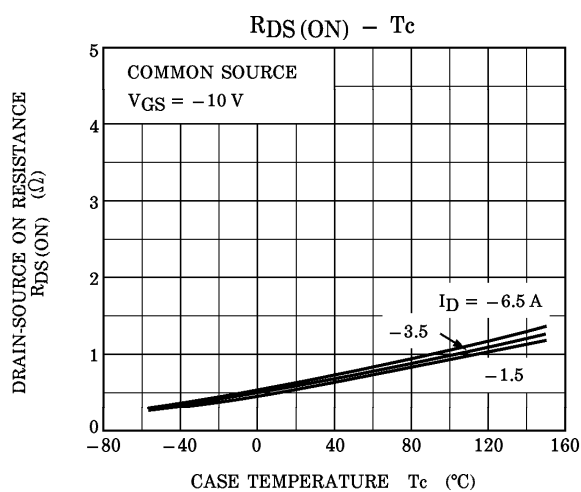


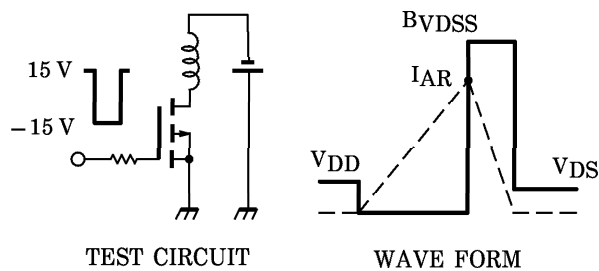
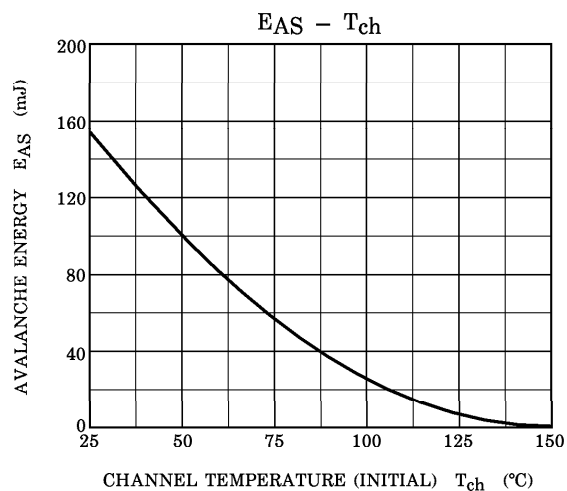
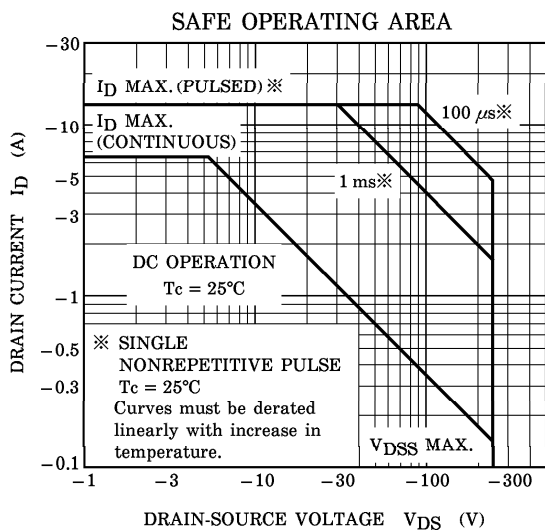
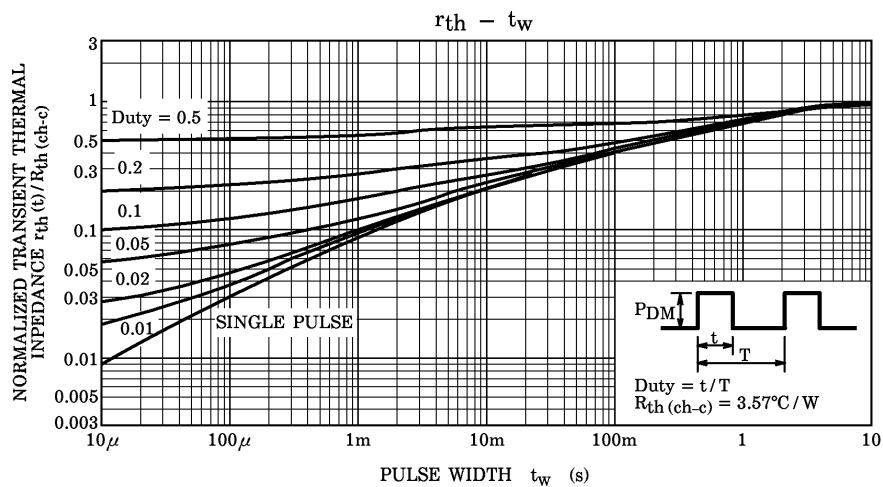
Month (Starting from Alphabet A)



Year (Last Number of the Christian Era)







Peak $I_{AR} = -6.5\text{ A}$, $R_G = 25\ \Omega$ $E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$
 $V_{DD} = -50\text{ V}$, $L = 6.3\text{ mH}$