

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

2SJ407

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

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.8\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 4.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = -200V$)
- Enhancement-Mode : $V_{th} = -1.5 \sim -3.5V$
($V_{DS} = -10V$, $I_D = -1mA$)

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-200	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	-200	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	30	W
Single Pulse Avalanche Energy**		E_{AS}	195	mJ
Avalanche Current		I_{AR}	-5	A
Repetitive Avalanche Energy*		E_{AR}	3.0	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	$R_{th(ch-c)}$	4.16	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

Note ;

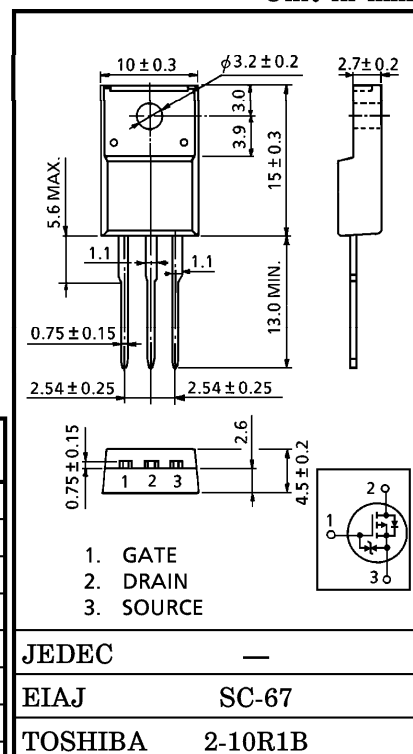
* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = -50V$, $T_{ch} = 25^\circ C$ (initial), $L = 12.6mH$, $R_G = 25\Omega$, $I_{AR} = -5A$

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

INDUSTRIAL APPLICATIONS

Unit in mm

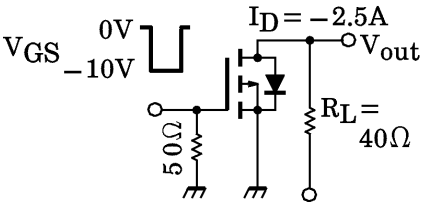


Weight : 1.9g

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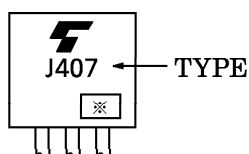
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±16V, V _{DS} = 0V	—	—	±10	μA
Drain Cut-off Current		I _{DSS}	V _{DS} = -200V, V _{GS} = 0V	—	—	-100	μA
Drain-Source Breakdown Voltage		V _(BR) DSS	I _D = -10mA, V _{GS} = 0V	-200	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = -10V, I _D = -1mA	-1.5	—	-3.5	V
Drain-Source ON Resistance		R _{DS(ON)}	V _{GS} = -10V, I _D = -2.5A	—	0.8	1.0	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} = -10V, I _D = -2.5A	2.0	4.0	—	S
Input Capacitance		C _{iss}	V _{DS} = -10V, V _{GS} = 0V f = 1MHz	—	800	—	pF
Reverse Transfer Capacitance		C _{rss}		—	80	—	
Output Capacitance		C _{oss}		—	270	—	
Switching Time	Rise Time	t _r	 V _{GS} = 0V, -10V, I _D = -2.5A, V _{DD} = -100V, R _L = 40Ω, 50Ω	—	15	—	ns
	Turn-on Time	t _{on}		—	30	—	
	Fall Time	t _f		—	6	—	
	Turn-off Time	t _{off}		—	65	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} = -160V V _{GS} = -10V I _D = -5A	—	20	—	nC
Gate-Source Charge		Q _{gs}		—	13	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	7	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	-5	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	-20	A
Diode Forward Voltage	V _{DSF}	I _{DR} = -5A, V _{GS} = 0V	—	—	2.0	V
Reverse Recovery Time	t _{rr}	I _{DR} = -5A, V _{GS} = 0V	—	210	—	ns
Reverse Recovery Charge	Q _{rr}	dI _{DR} / dt = 100A / μs	—	1.2	—	μC

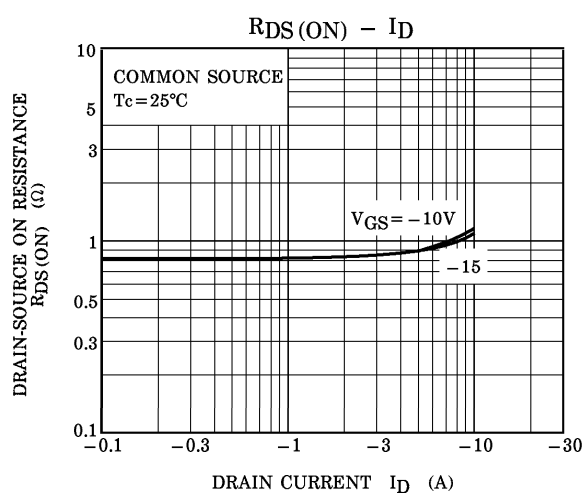
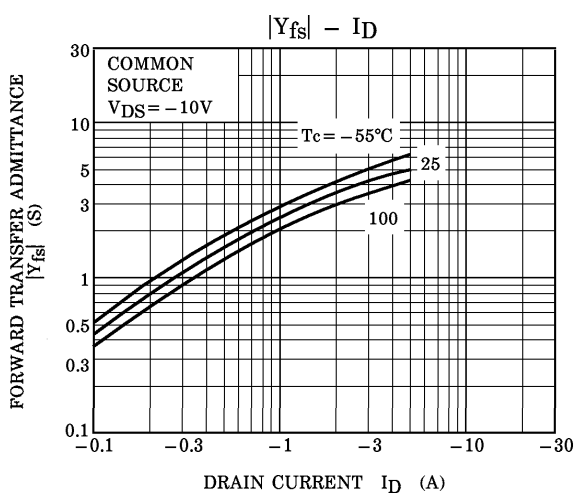
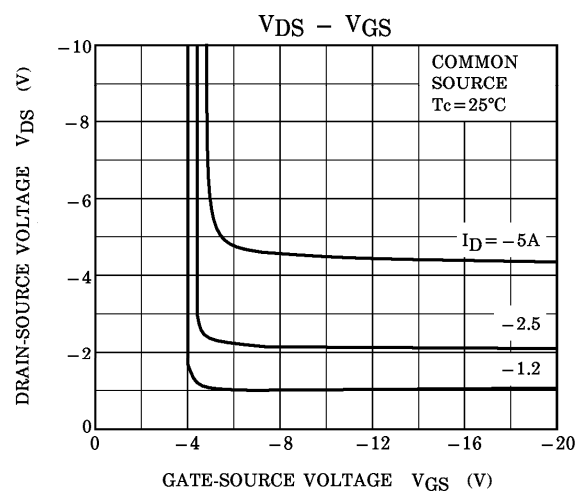
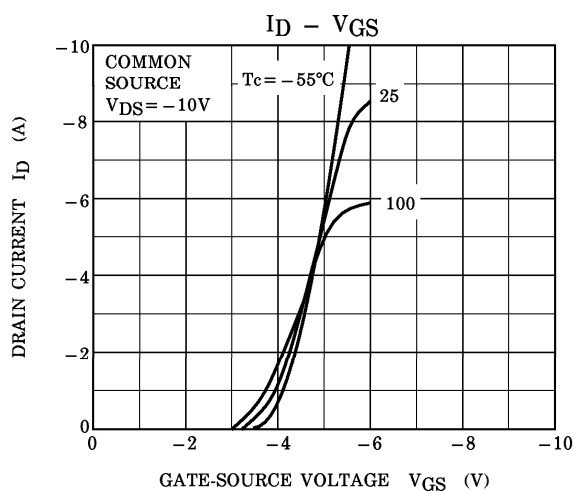
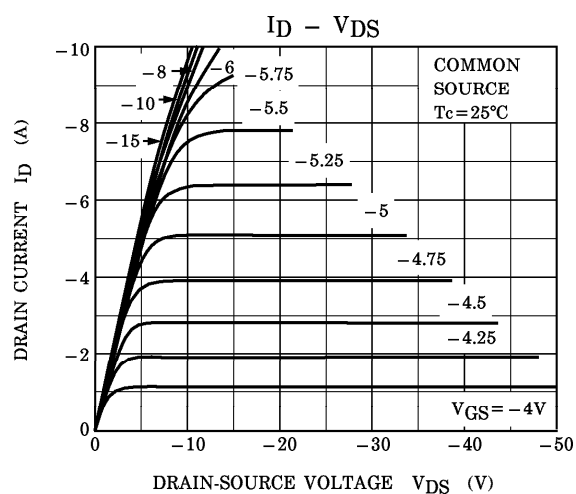
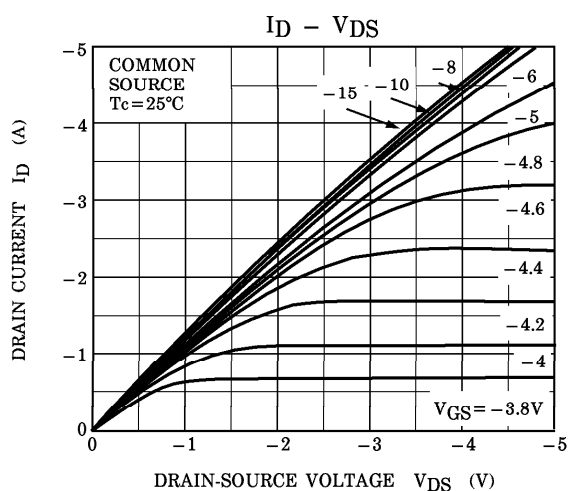
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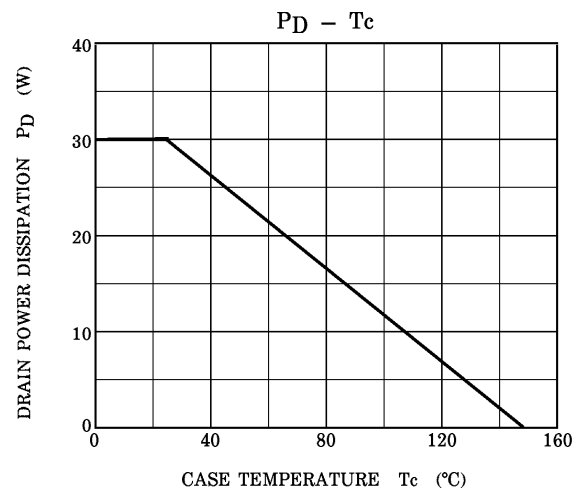
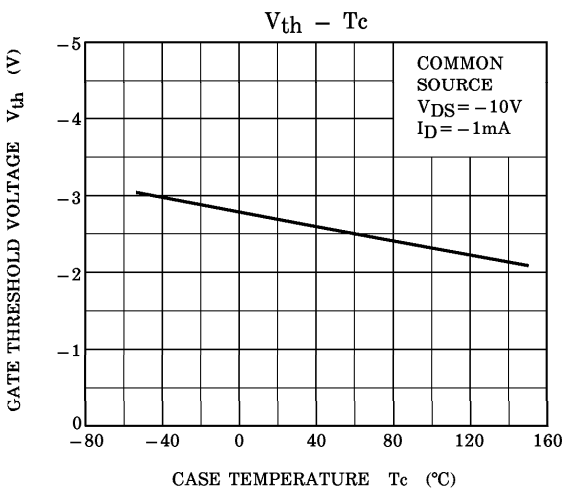
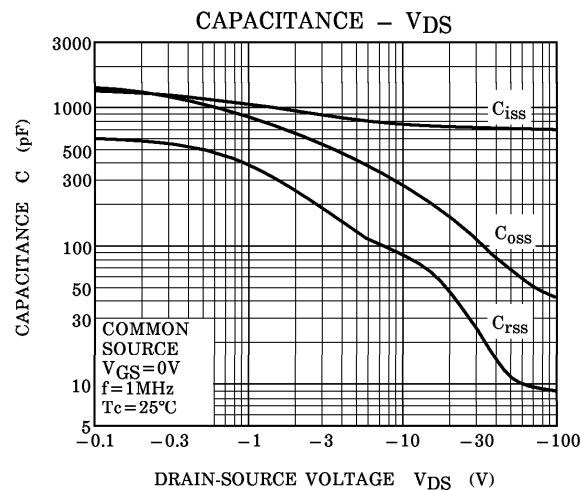
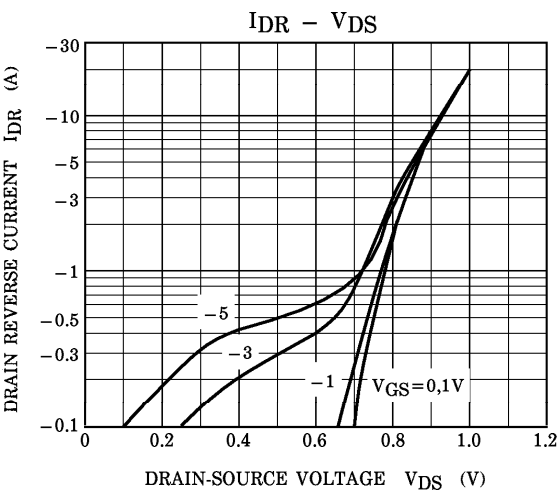
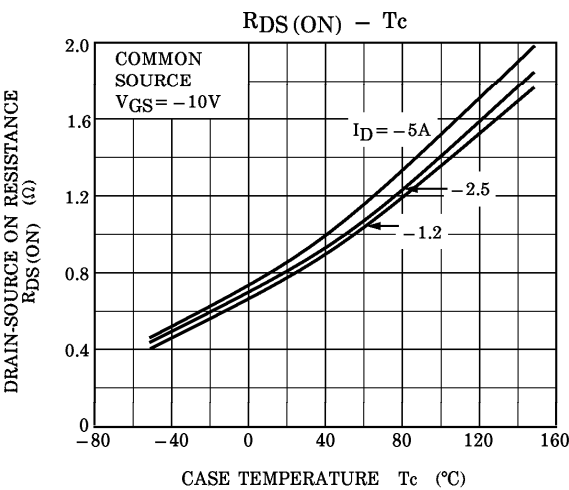


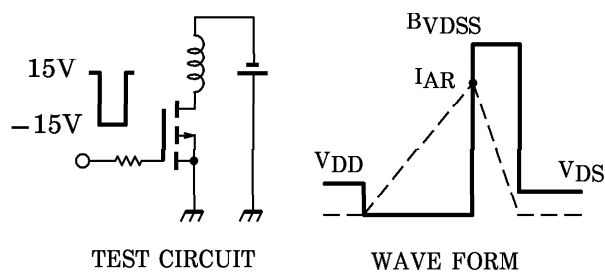
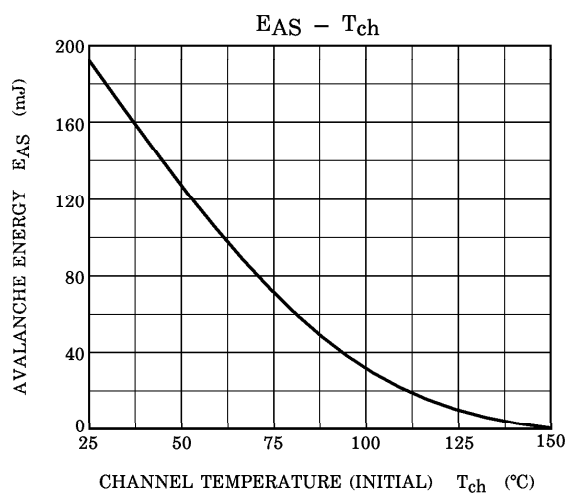
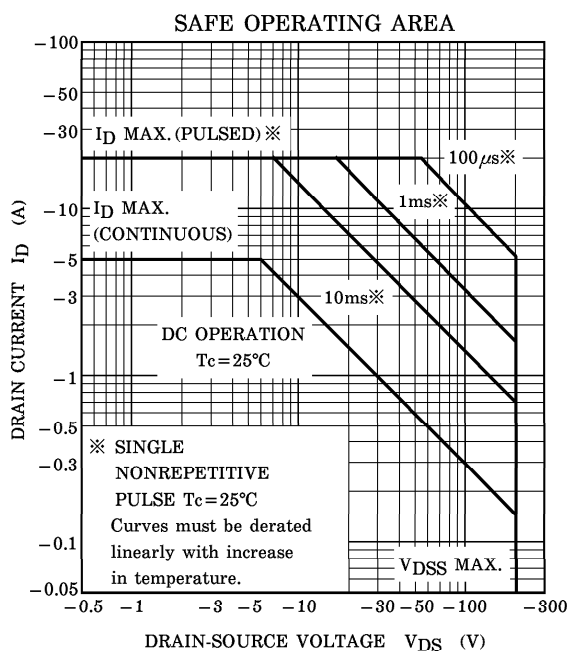
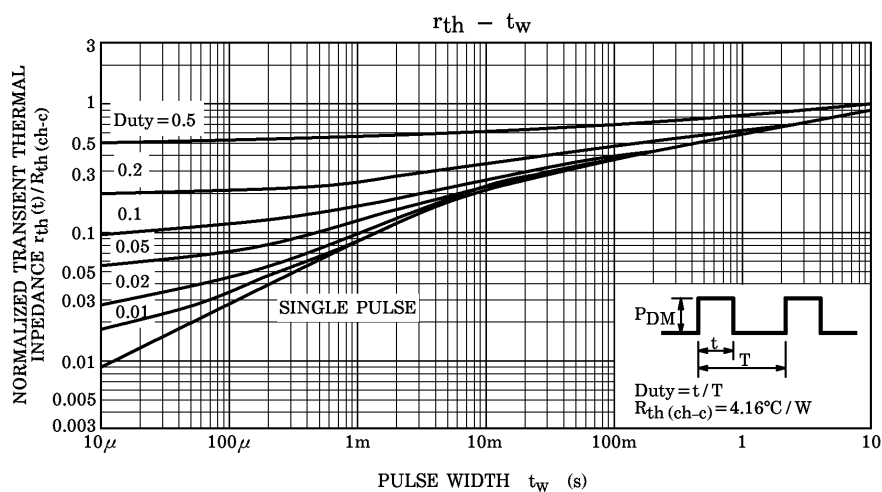
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = -5A$, $R_G = 25\Omega$
 $V_{DD} = -50V$, $L = 12.6mH$ $E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$