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

2SJ439

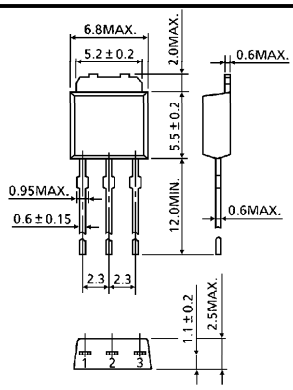
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

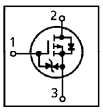
INDUSTRIAL APPLICATIONS

- 2.5V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS\,(ON)} = 0.18\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 6.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = -16V$)
- Enhancement-Mode : $V_{th} = -0.5 \sim -1.1V$ ($V_{DS} = -10V$, $I_D = -1mA$)

Unit in mm



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE



JEDEC	—
EIAJ	SC-64
TOSHIBA	2-7B1B

MAXIMUM RATINGS (Ta = 25°C)

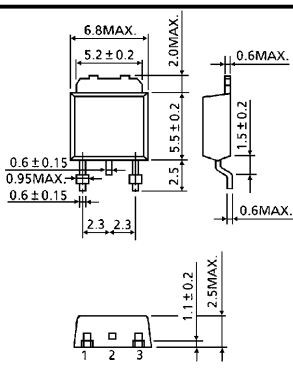
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	−16	V
Drain-Gate Voltage (R_{GS} = 20kΩ)		V_{DGR}	−16	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current	DC	I_D	−5	A
	Pulse	I_{DP}	−20	
Drain Power Dissipation (Tc = 25°C)		P_D	20	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

THERMAL CHARACTERISTICS

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

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

Unit in mm



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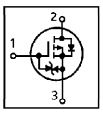

JEDEC	—
EIAJ	SC-64
TOSHIBA	2-7B2B

Weight : 0.36g

961001EAA2

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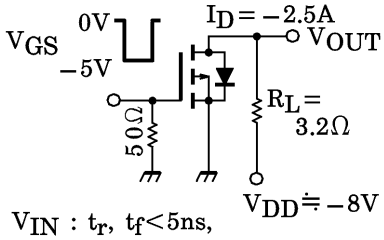
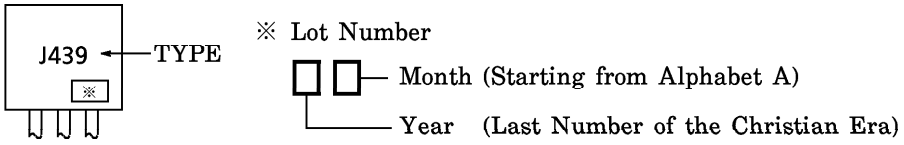
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS}=\pm6.5V$, $V_{DS}=0V$	—	—	±10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS}=-16V$, $V_{GS}=0V$	—	—	−100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D=-10mA$, $V_{GS}=0V$	−16	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS}=-10V$, $I_D=-1mA$	−0.5	—	−1.1	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS}=-2.5V$, $I_D=-2.5A$	—	0.18	0.28	Ω
			$V_{GS}=-4V$, $I_D=-2.5A$	—	0.14	0.2	
Forward Transfer Admittance		$\|Y_{fs}\|$	$V_{DS}=-10V$, $I_D=-2.5A$	3.0	6.0	—	S
Input Capacitance		C_{iss}	$V_{DS}=-10V$, $V_{GS}=0V$, f=1MHz	—	1050	—	pF
Reverse Transfer Capacitance		C_{rss}		—	120	—	
Output Capacitance		C_{oss}		—	460	—	
Switching Time	Rise Time	t_r	 V_{IN} : t_r, $t_f<5ns$, Duty ≦ 1%, $t_w=10\mu s$	—	80	—	ns
	Turn-on Time	t_{on}		—	100	—	
	Fall Time	t_f		—	250	—	
	Turn-off Time	t_{off}		—	550	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD}\fallingdotseq-16V$, $V_{GS}=-5V$, $I_D=-5A$	—	24	—	nC
Gate-Source Charge		Q_{gs}		—	16	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	8	—	

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}	$I_{DR}=-5A$, $V_{GS}=0V$	—	—	1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR}=-5A$, $V_{GS}=0V$	—	120	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt=50A/\mu s$	—	0.12	—	μC

MARKING



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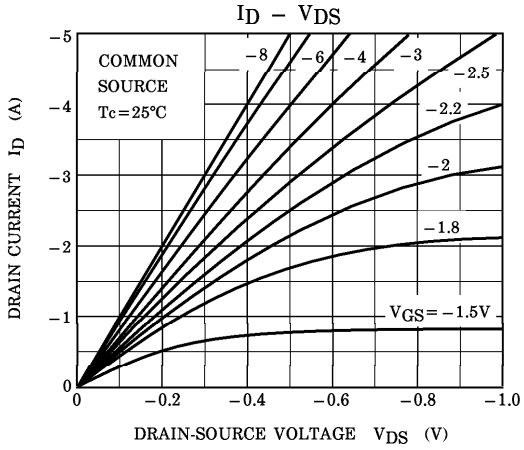

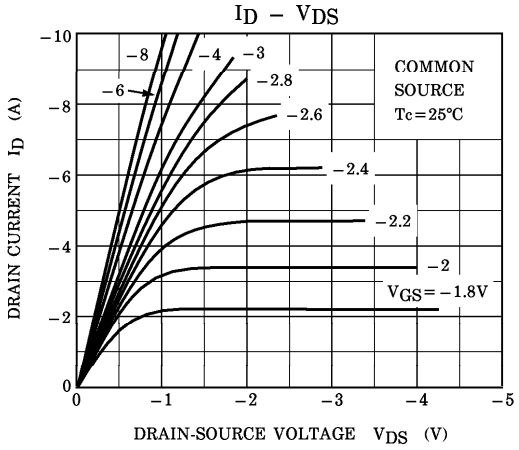

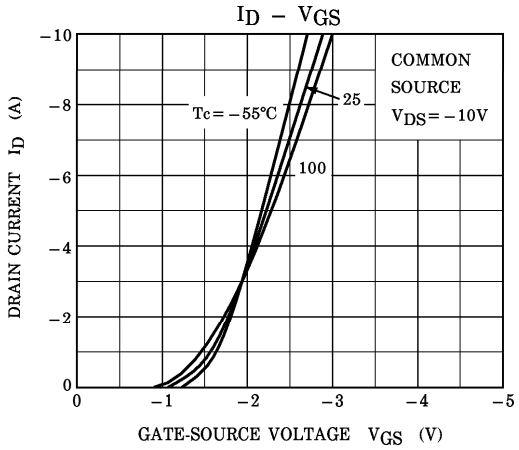

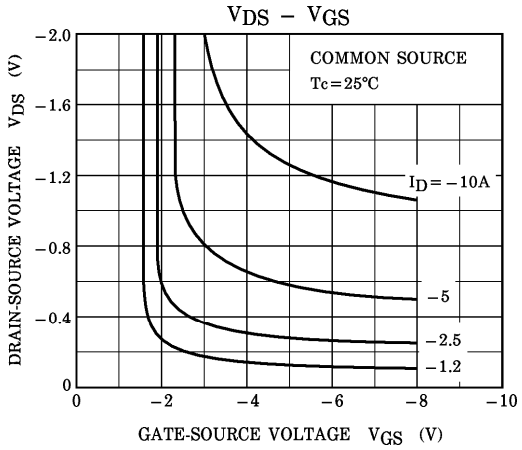

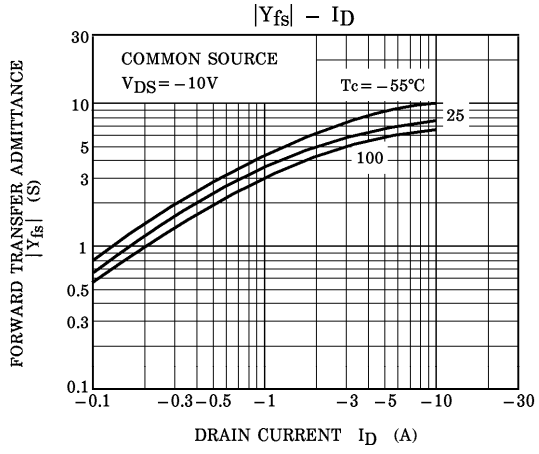

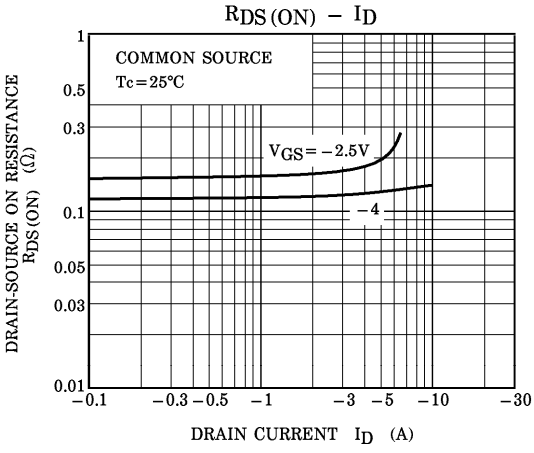

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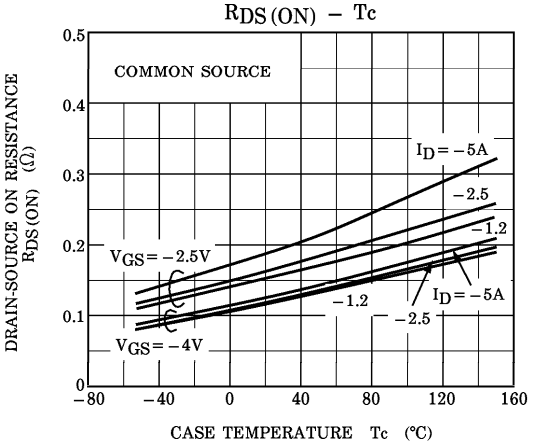
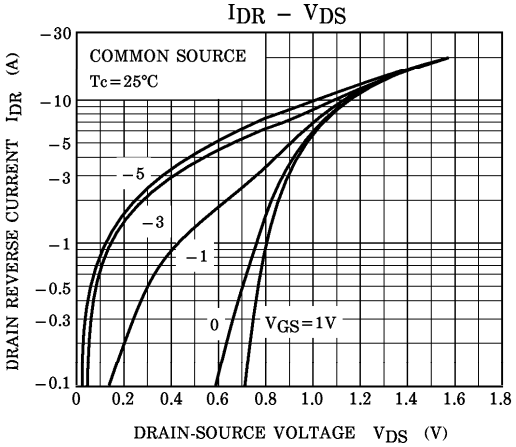
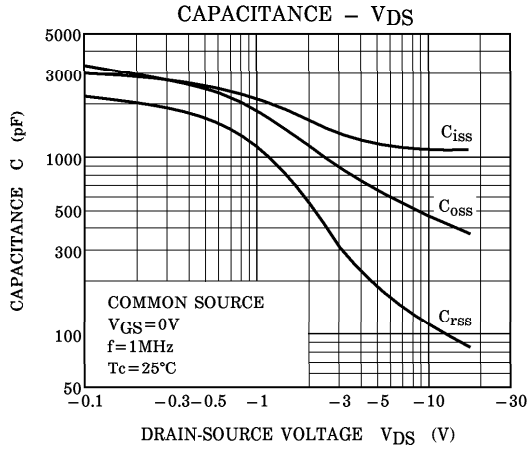
$R_{DS\,(ON)}$ – Tc



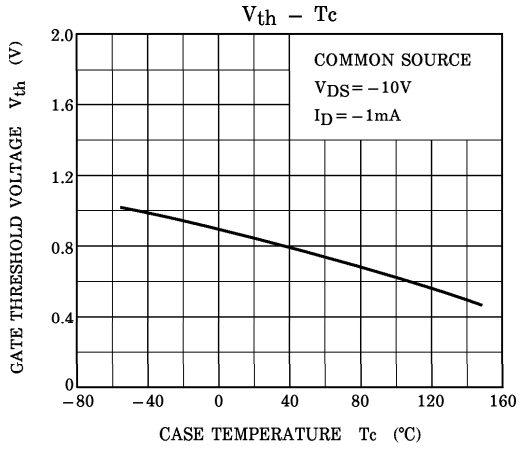
I_{DR} – V_{DS}



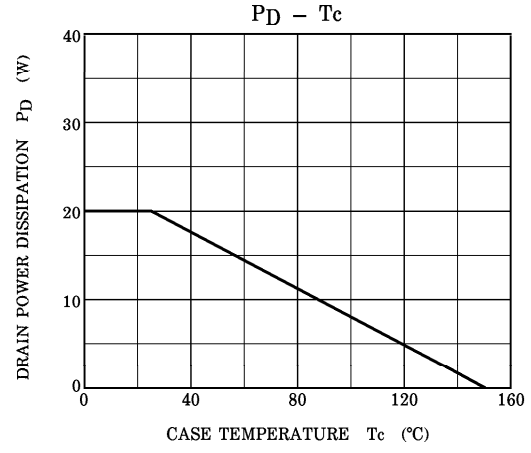
CAPACITANCE – V_{DS}



V_{th} – Tc



P_D – Tc



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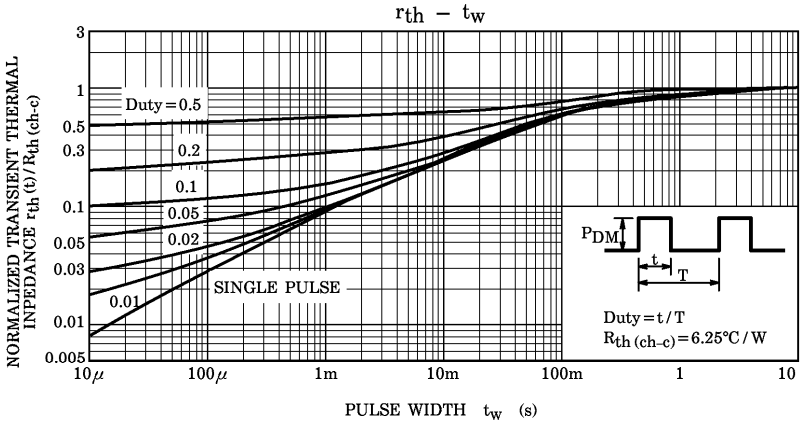

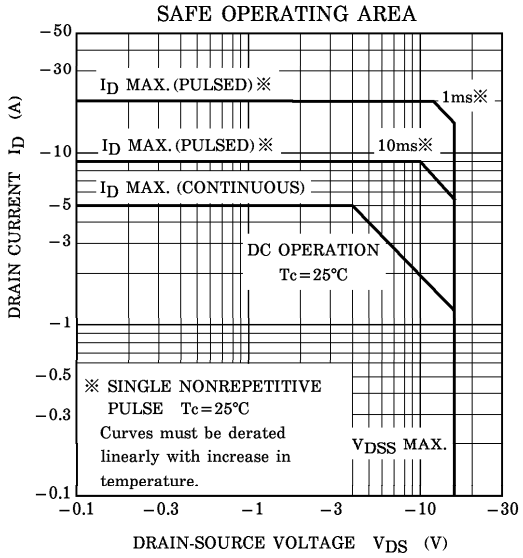

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