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

2SK2493

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, AND DC-DC CONVERTER APPLICATIONS

INDUSTRIAL APPLICATIONS

- 2.5V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS\,(ON)} = 0.08m\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 8.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 16V$)
- Enhancement-Mode : $V_{th} = 0.5 \sim 1.1V$ ($V_{DS} = 10V$, $I_D = 1mA$)

MAXIMUM RATINGS (Ta = 25°C)

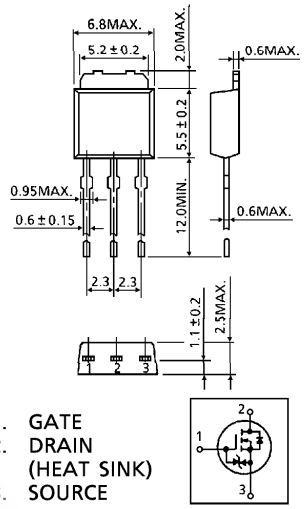
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	16	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	16	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current	DC	I_D	5	A
	Pulse	I_{DP}	20	A
Drain Power Dissipation (Tc = 25°C)		P_D	20	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature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

THERMAL CHARACTERISTICS

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

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

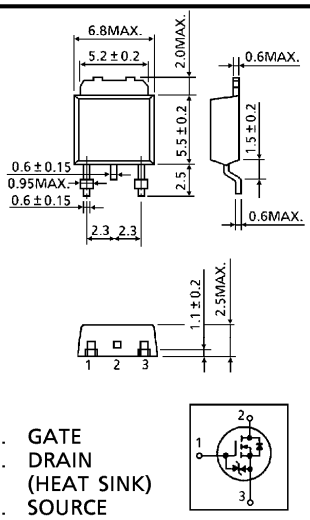
Unit in mm



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

JEDEC	—
EIAJ	SC-64
TOSHIBA	2-7B1B

Unit in mm



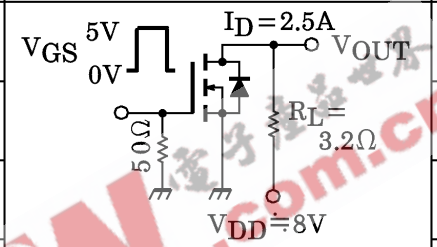
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	SC-64
TOSHIBA	2-7B2B

Weight : 0.36g

961001EAA2

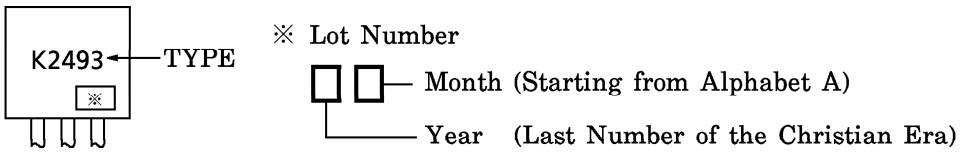
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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		$R_{DS\,(ON)}$	$V_{GS}=2.5V$, $I_D=2.5A$	—	0.08	0.12	Ω
			$V_{GS}=4V$, $I_D=2.5A$	—	0.07	0.1	
Forward Transfer Admittance		$\|Y_{fs}\|$	$V_{DS}=10V$, $I_D=2.5A$	4.0	8.0	—	S
Input Capacitance		C_{iss}	$V_{DS}=10V$, $V_{GS}=0V$ f = 1MHz	—	1200	—	pF
Reverse Transfer Capacitance		C_{rss}		—	110	—	
Output Capacitance		C_{oss}		—	380	—	
Switching Time	Rise Time	t_r		—	30	—	ns
	Turn-on Time	t_{on}		—	50	—	
	Fall Time	t_f		—	200	—	
	Turn-off Time	t_{off}		—	650	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD}\fallingdotseq16V$, $V_{GS}=5V$ $I_D=5A$	—	23	—	nC
Gate-Source Charge		Q_{gs}		—	17	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	6	—	

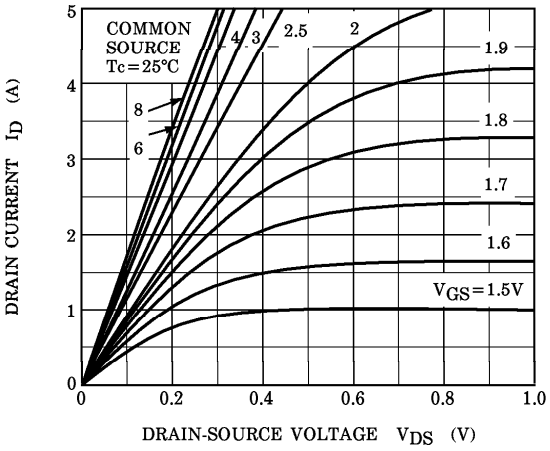
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

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

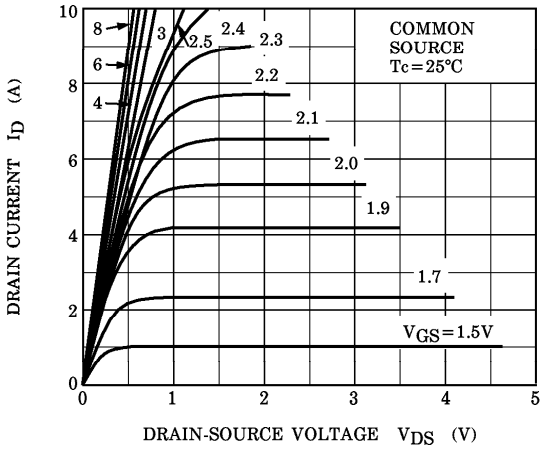
MARKING



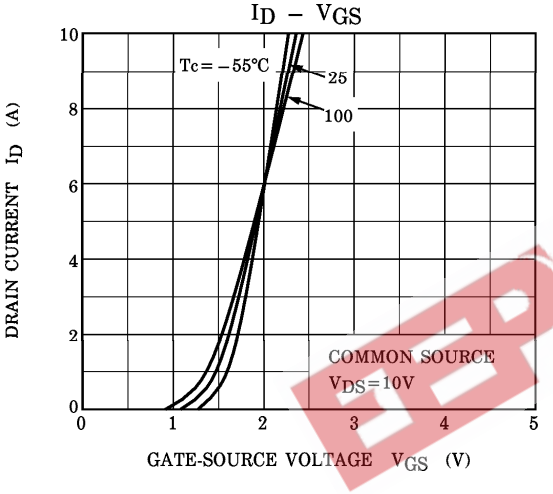
I_D – V_{DS}



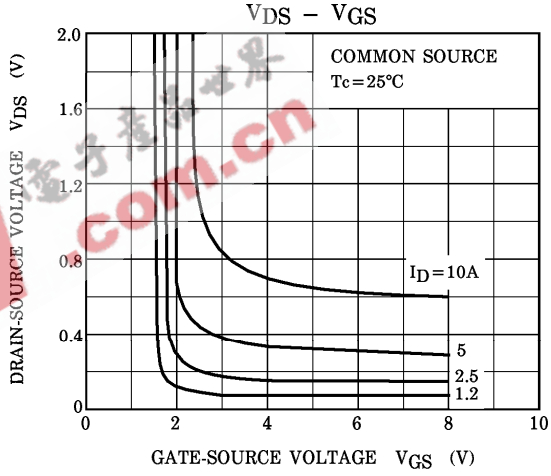
I_D – V_{DS}



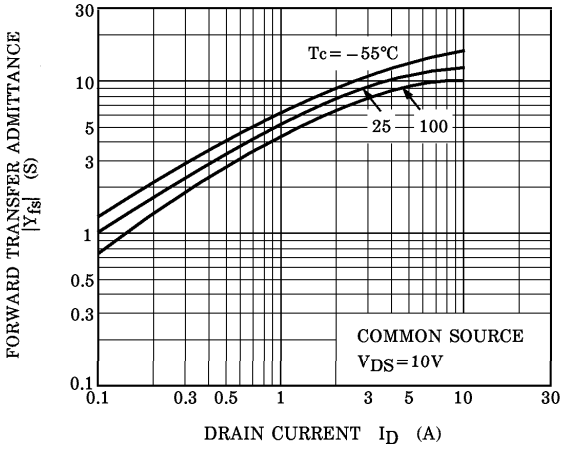
I_D – V_{GS}



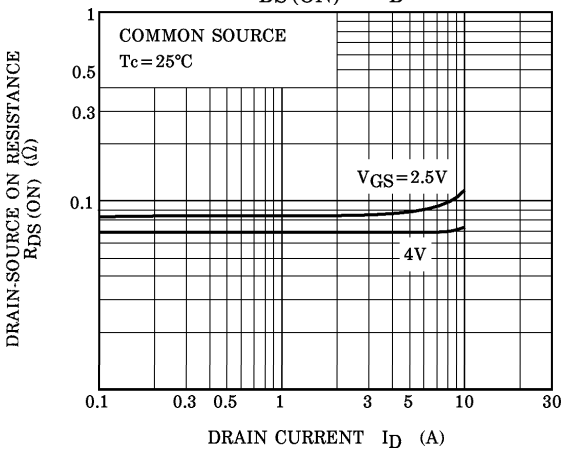
V_{DS} – V_{GS}



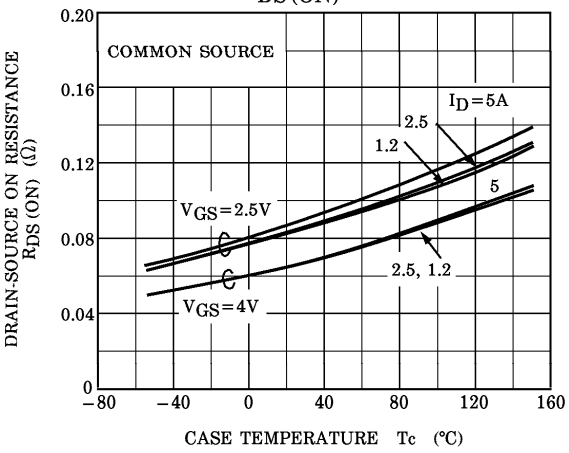
$|Y_{fs}|$ – I_D



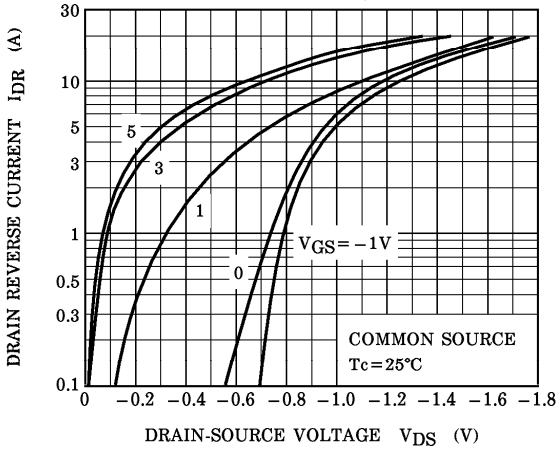
$R_{DS\,(ON)}$ – I_D



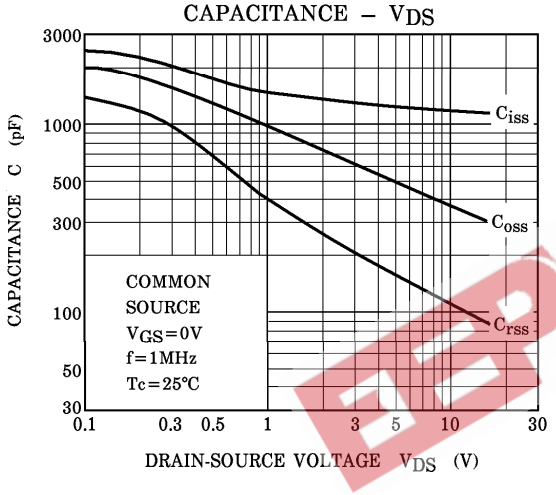
$R_{DS\,(ON)}$ – Tc



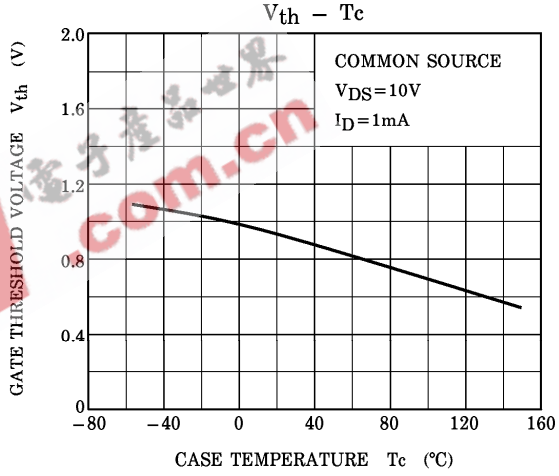
I_{DR} – V_{DS}



CAPACITANCE – V_{DS}



V_{th} – Tc



P_D – Tc