

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

2SK2507

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

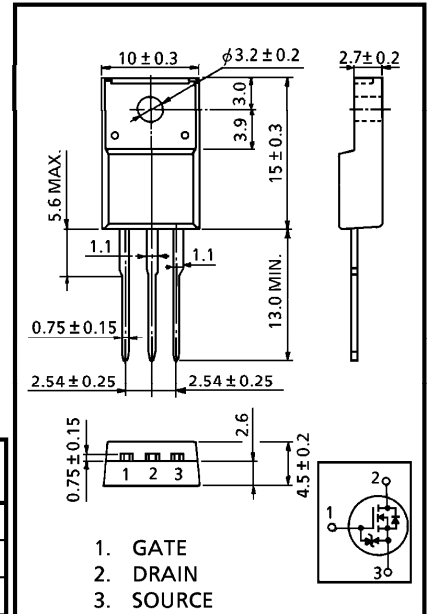
INDUSTRIAL APPLICATIONS

Unit in mm

- 4 V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.034 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 16 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.) ($V_{DS} = 50 V$)
- Enhancement-Mode : $V_{th} = 0.8 \sim 2.0 V$
($V_{DS} = 10 V, I_D = 1mA$)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	50	V
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)	V_{DGR}	50	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	25
	Pulse	I_{DP}	75
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	30	W
Single Pulse Avalanche Energy**	E_{AS}	138	mJ
Avalanche Current	I_{AR}	25	A
Repetitive Avalanche Energy*	E_{AR}	3	mJ
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C



JEDEC	—
EIAJ	SC-67
TOSHIBA	2-10R1B

Weight : 1.9 g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	4.17	°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.
- ** $V_{DD} = 25 V, T_{ch} = 25^\circ C$ (initial), $L = 272 \mu H, R_G = 25 \Omega, I_{AR} = 25 A$

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

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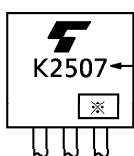
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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} = 50 V, V _{GS} = 0 V	—	—	100	μA			
Drain-Source Breakdown Voltage	V _{(BR) DSS}	I _D = 10 mA, V _{GS} = 0 V	50	—	—	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	—	0.058	0.08	Ω			
		V _{GS} = 10 V, I _D = 12 A	—	0.034	0.046				
Forward Transfer Admittance	Y _{fs}	V _{DS} = 10 V, I _D = 12 A	8.0	16	—	S			
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz	—	900	—	pF			
Reverse Transfer Capacitance	C _{rss}		—	130	—				
Output Capacitance	C _{oss}		—	370	—				
Switching Time	Rise Time	t _r				—	15	—	ns
	Turn-on Time	t _{on}				—	25	—	
	Fall Time	t _f				—	30	—	
	Turn-off Time	t _{off}				—	110	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} ≐ 40 V, V _{GS} = 10 V, I _D = 25 A	—	25	—	nC			
Gate-Source Charge	Q _{gs}	—	—	19	—				
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}	—	—	—	25	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	75	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 25 A, V _{GS} = 0 V	—	—	-1.6	ns
Reverse Recovery Time	t _{rr}	I _{DR} = 25 A, V _{GS} = 0 V	—	60	—	μC
Reverse Recovery Charge	Q _{rr}	dI _{DR} / dt = 50 A / μs	—	45	—	

MARKING

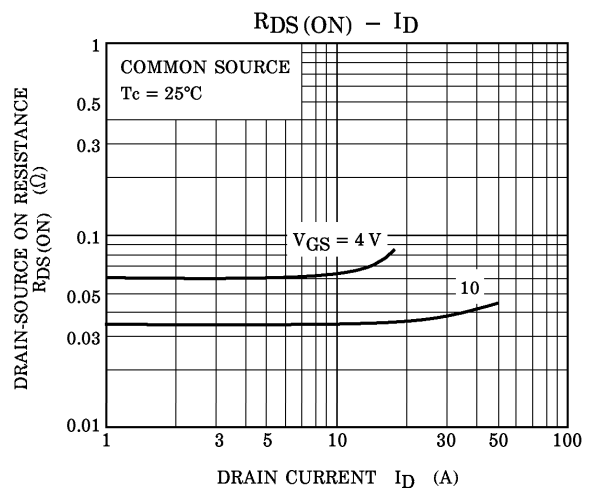
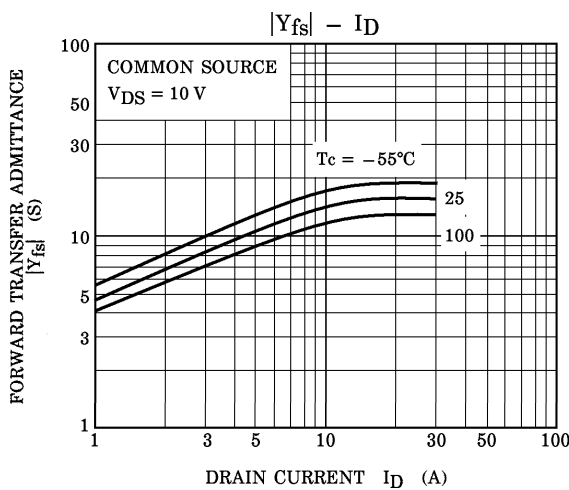
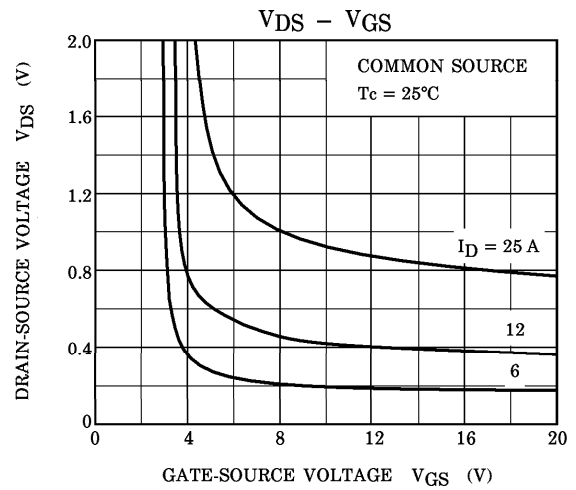
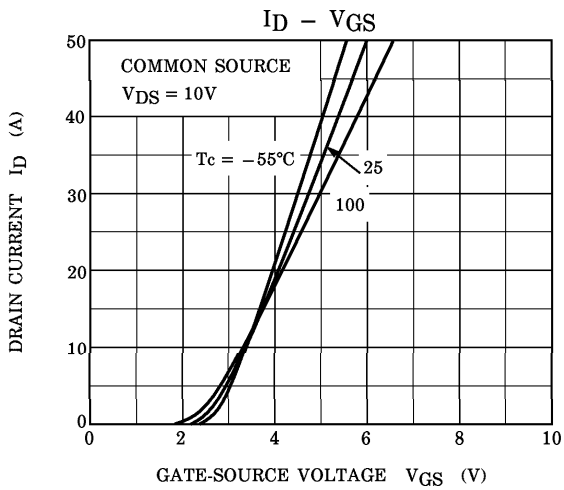
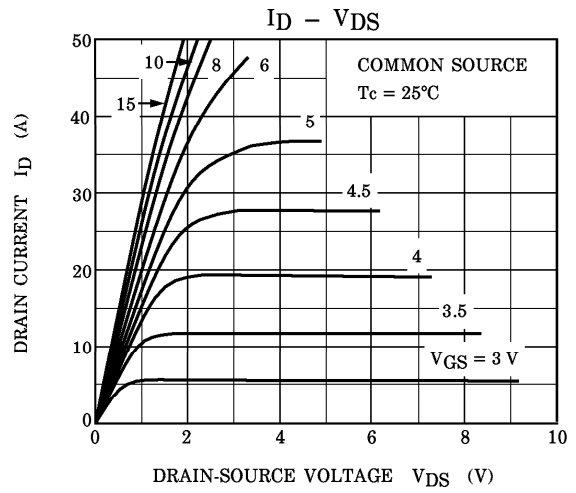
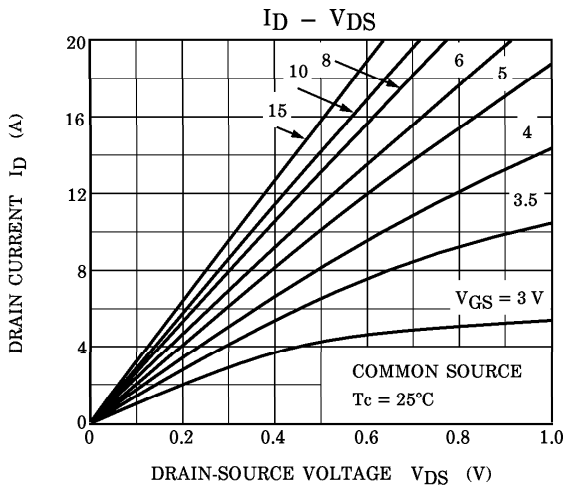


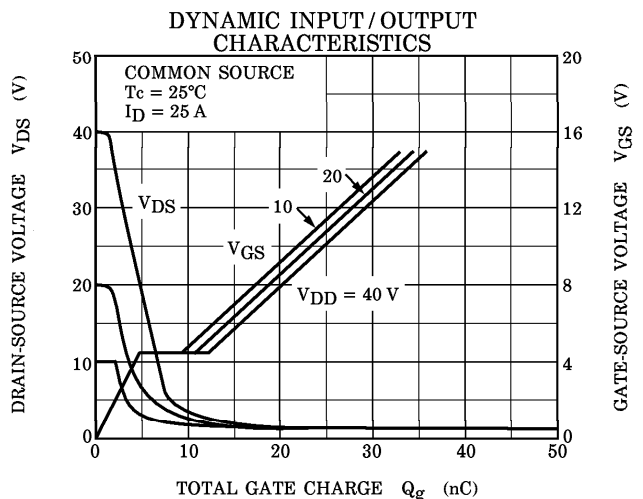
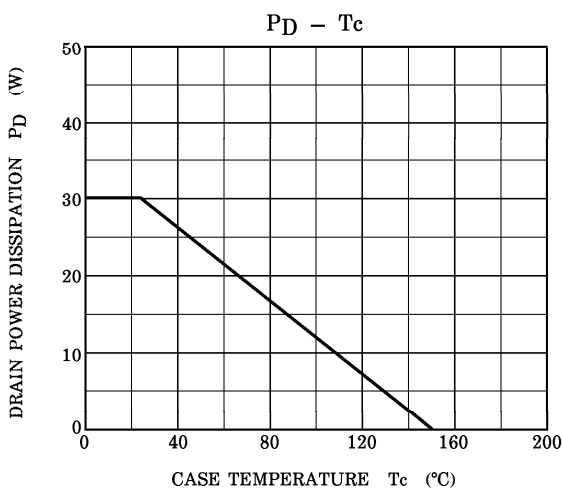
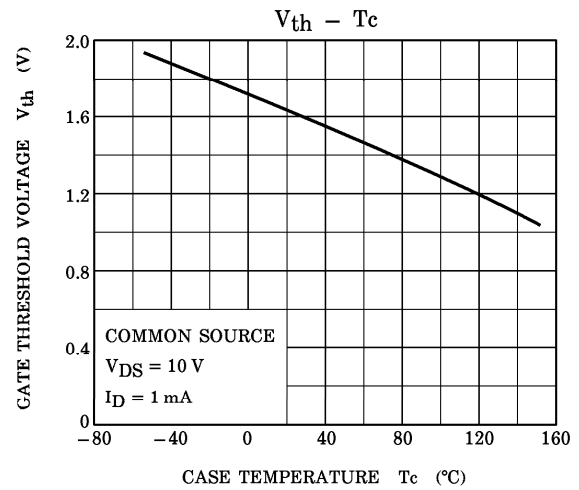
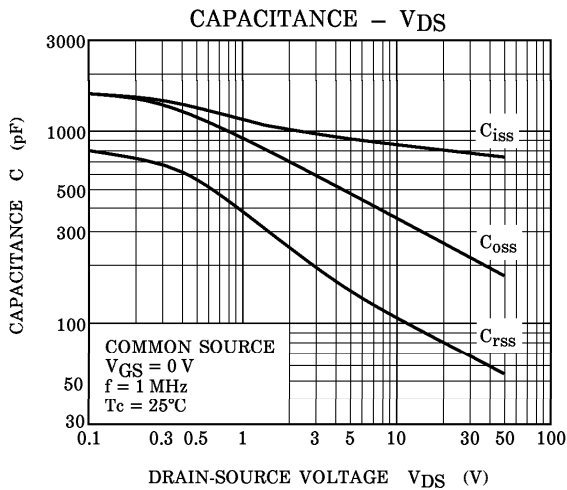
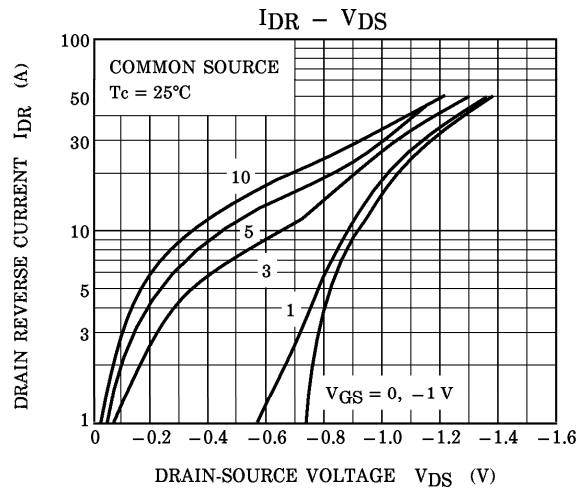
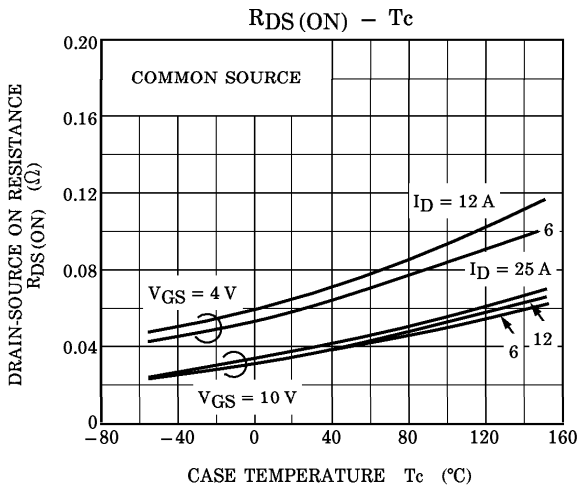
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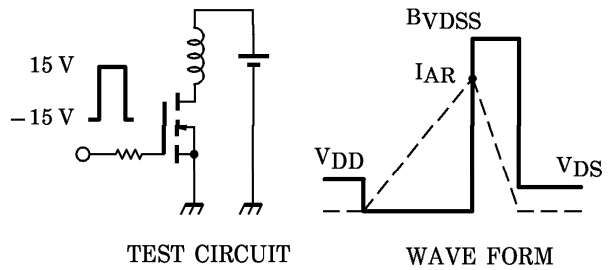
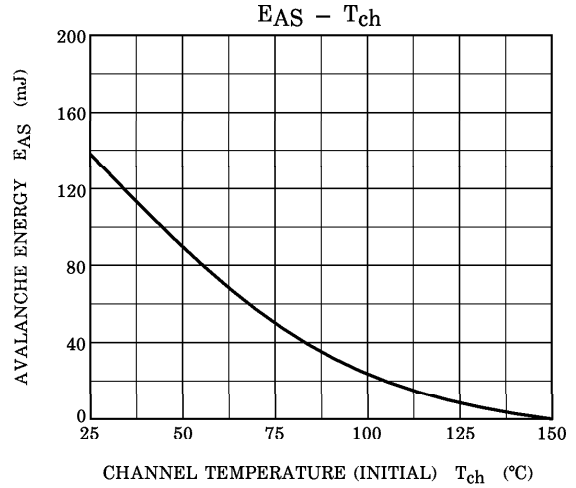
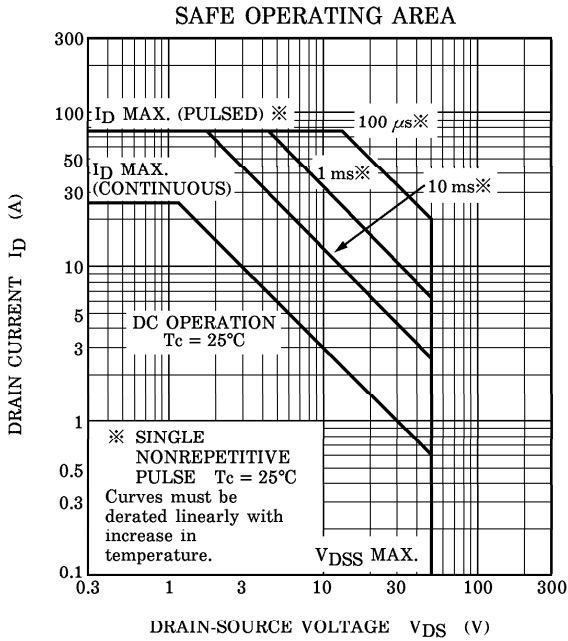
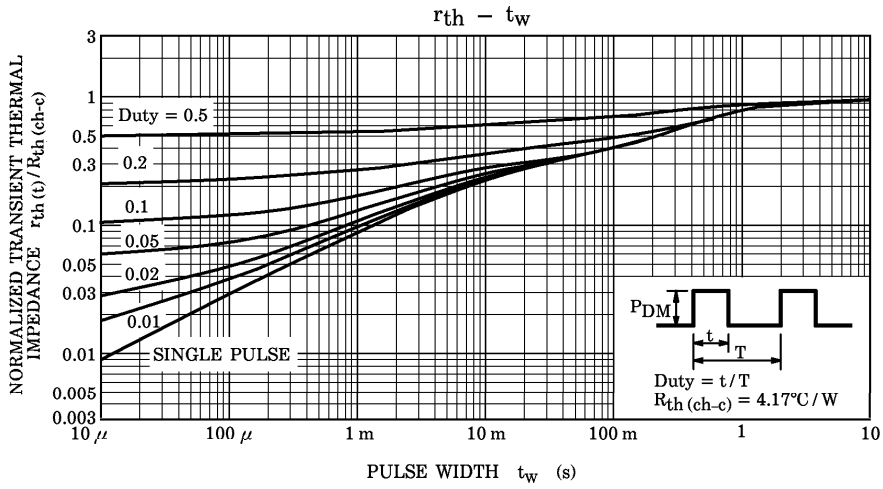
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







$$\text{Peak } I_{AR} = 25 \text{ A, } R_G = 25 \Omega, \text{ } E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{BVDSS}{BVDSS - V_{DD}} \right)$$

$$V_{DD} = 25 \text{ V, } L = 272 \mu\text{H}$$