

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

2SK2750

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

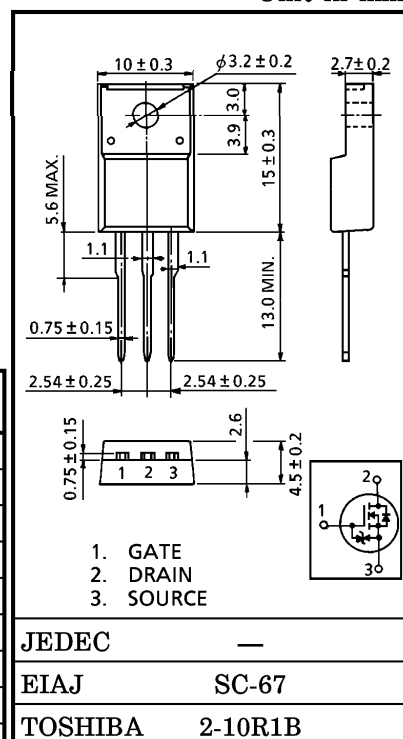
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 1.7\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 3.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 600V$)
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0V$ ($V_{DS} = 10V$, $I_D = 1mA$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	600	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	600	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	3.5
	Pulse	I_{DP}	14
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	35	W
Single Pulse Avalanche Energy**	E_{AS}	201	mJ
Avalanche Current	I_{AR}	3.5	A
Repetitive Avalanche Energy*	E_{AR}	3.5	mJ
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$

INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 1.9g

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.

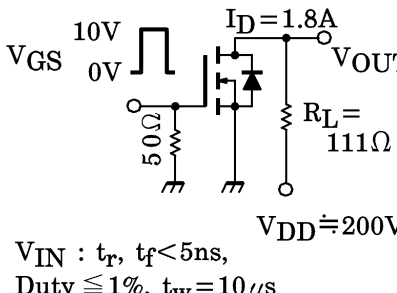
** $V_{DD} = 90V$, Starting $T_{ch} = 25^\circ C$, $L = 28.8mH$, $R_G = 25\Omega$, $I_{AR} = 3.5A$

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

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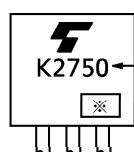
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±25V, V _{DS} = 0V	—	—	±10	μA
Gate-Source Breakdown Voltage		V (BR) GSS	I _G = ±10 μA, V _{DS} = 0V	±30	—	—	V
Drain Cut-off Current		I _{DSS}	V _{DS} = 600V, V _{GS} = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) DSS	I _D = 10mA, V _{GS} = 0V	600	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = 10V, I _D = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance		R _{DS} (ON)	V _{GS} = 10V, I _D = 1.8A	—	1.7	2.2	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} = 10V, I _D = 1.8A	2.0	3.0	—	S
Input Capacitance		C _{iss}	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	800	—	pF
Reverse Transfer Capacitance		C _{rss}		—	6	—	
Output Capacitance		C _{oss}		—	65	—	
Switching Time	Rise Time	t _r	 V_{IN} : t_r, t_f < 5ns, Duty ≤ 1%, t_w = 10 μs	—	15	—	ns
	Turn-on Time	t _{on}		—	50	—	
	Fall Time	t _f		—	15	—	
	Turn-off Time	t _{off}		—	85	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} = 400V, V _{GS} = 10V, I _D = 3.5A	—	20	—	nC
Gate-Source Charge		Q _{gs}		—	10	—	
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}	—	—	—	3.5	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	14	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 3.5A, V _{GS} = 0V	—	—	−1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = 3.5A, V _{GS} = 0V	—	400	—	ns
Reverse Recovery Charge	Q _{rr}	dI _{DR} / dt = 100A / μs	—	2.6	—	μC

MARKING



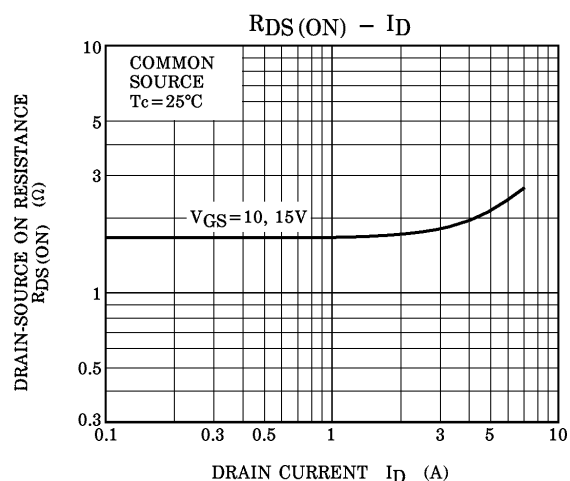
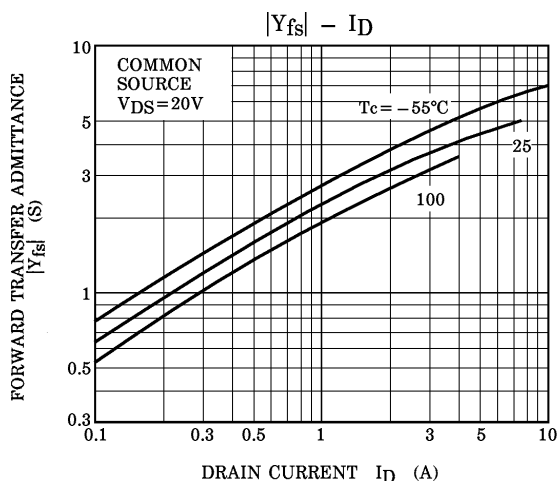
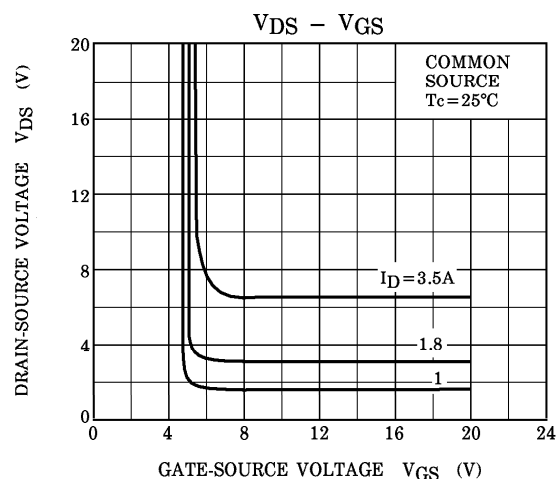
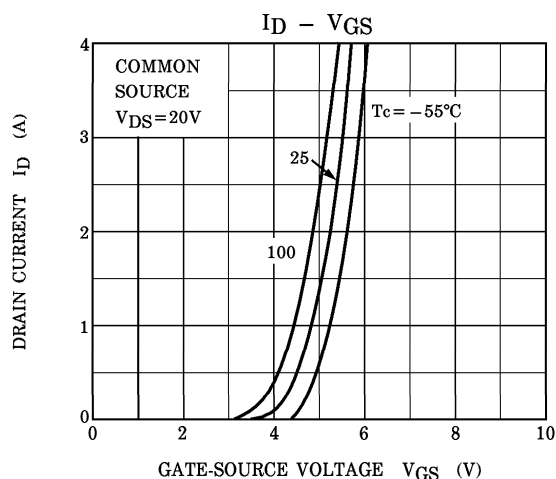
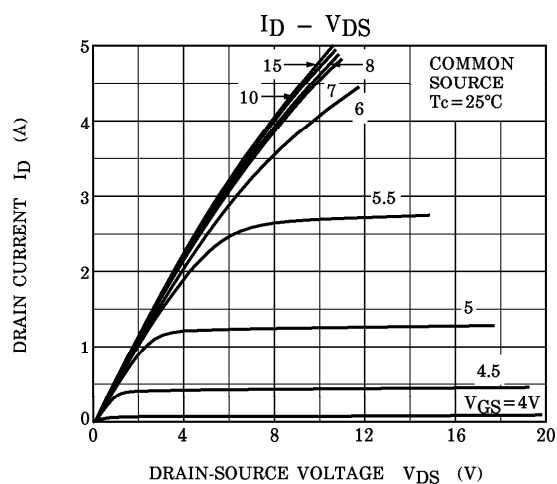
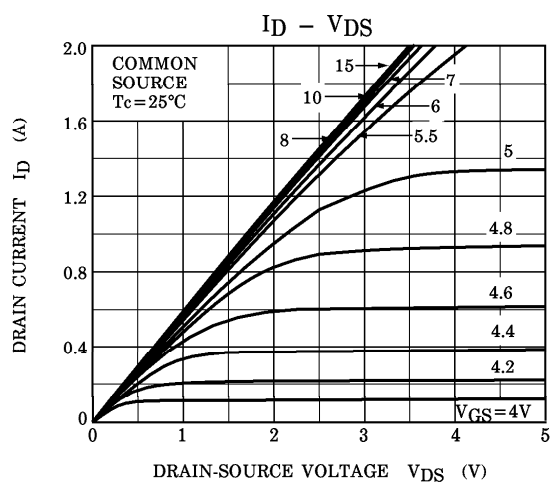
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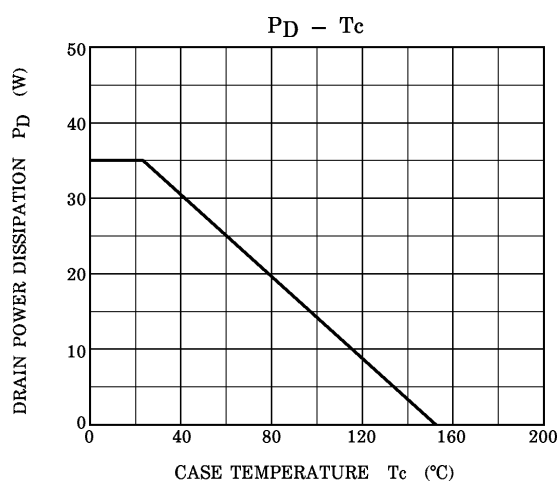
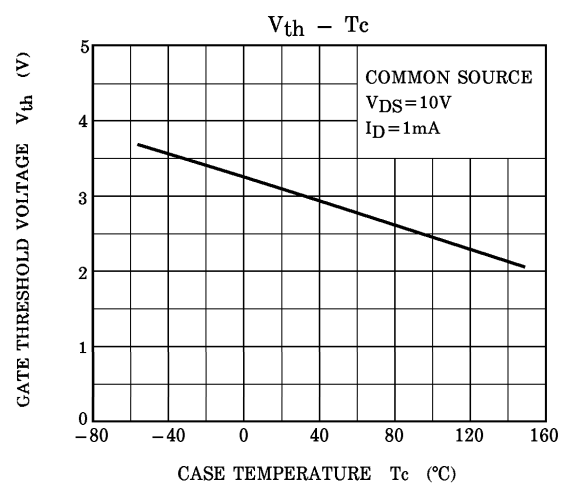
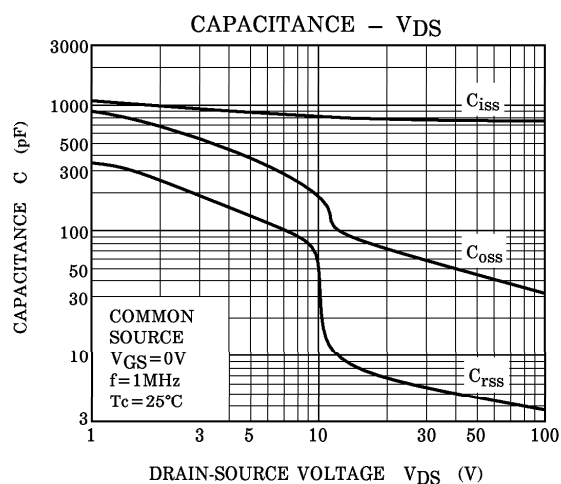
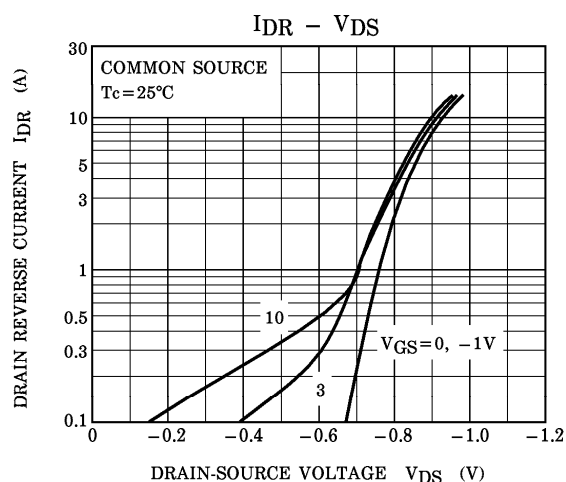
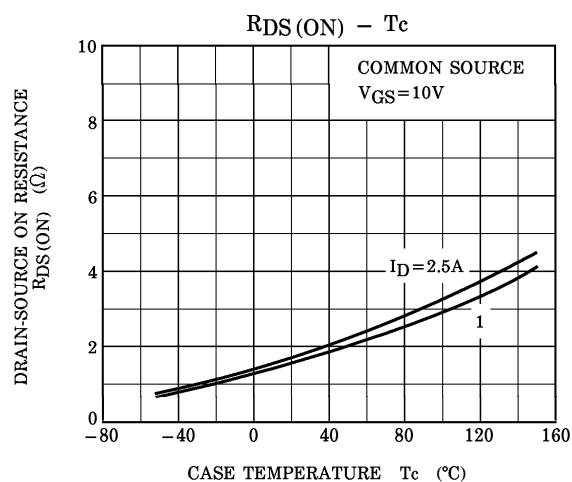
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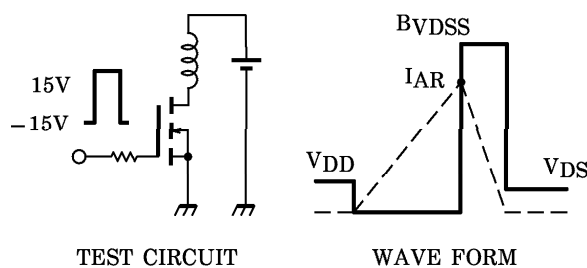
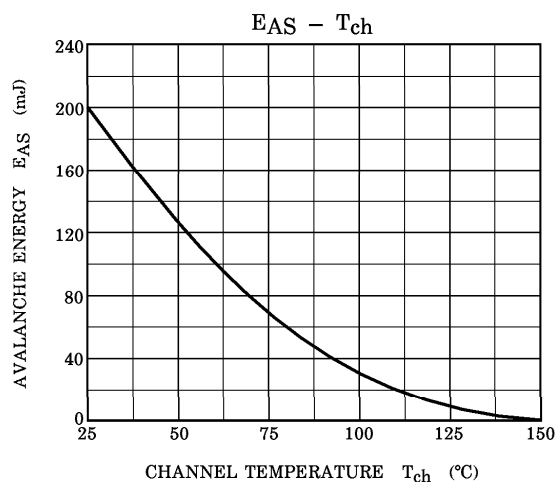
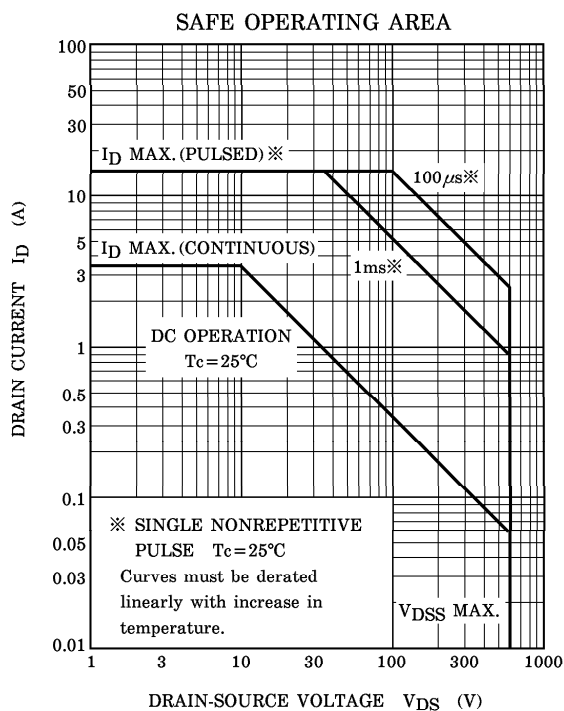
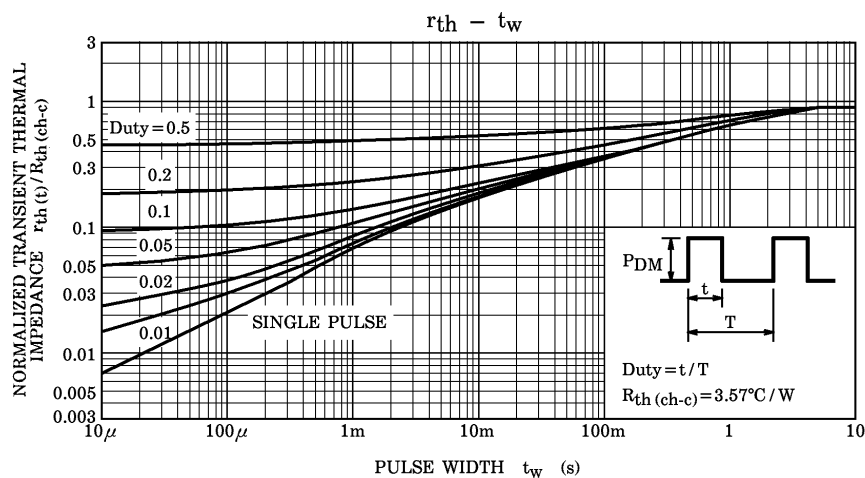


Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)







Peak $I_{AR} = 3.5A$, $R_G = 25\Omega$
 $V_{DD} = 90V$, $L = 28.8mH$

$$E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$$