

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

2SK2952

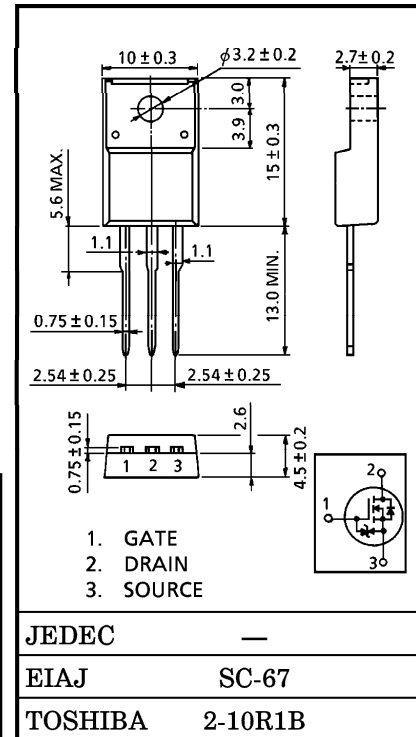
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
 CHOPPER REGULATOR APPLICATIONS

INDUSTRIAL APPLICATIONS
 Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.4\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 8.0S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.)
($V_{DS} = 400V$)
- 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}	400	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	400	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	8.5	A
	Pulse	I_{DP}	34	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	40	W
Single Pulse Avalanche Energy**		E_{AS}	427	mJ
Avalanche Current		I_{AR}	8.5	A
Repetitive Avalanche Energy*		E_{AR}	4.0	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 1.9g (Typ.)

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	3.125	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

Note ;

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

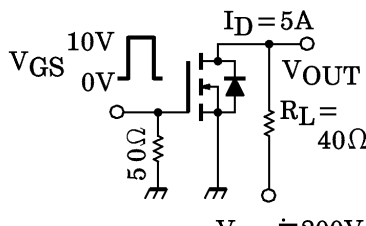
** $V_{DD} = 90V$, Starting $T_{ch} = 25^\circ C$, $L = 9.6mH$, $R_G = 25\Omega$, $I_{AR} = 8.5A$

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

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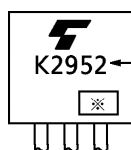
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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 = ±10μA, V _{DS} = 0V	±30	—	—	V	
Drain Cut-Off Current	I _{DSS}	V _{DS} = 400V, V _{GS} = 0V	—	—	100	μA	
Drain-Source Breakdown Voltage	V (BR) DSS	I _D = 10mA, V _{GS} = 0V	400	—	—	V	
Gate Threshold Voltage	V _{th}	V _{DS} = 10V, I _D = 1mA	2.0	—	4.0	V	
Drain-Source ON Resistance	R _{D(S) (ON)}	V _{GS} = 10V, I _D = 5A	—	0.4	0.55	Ω	
Forward Transfer Admittance	Y _{fs}	V _{DS} = 10V, I _D = 5A	4.0	8.0	—	S	
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz	—	1340	—	pF	
Reverse Transfer Capacitance	C _{rss}		—	160	—		
Output Capacitance	C _{oss}		—	490	—		
Switching Time	Rise Time	t _r		—	22	—	ns
	Turn-On Time	t _{on}		—	60	—	
	Fall Time	t _f		—	32	—	
	Turn-Off Time	t _{off}		—	140	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} ≐ 320V, V _{GS} = 10V, I _D = 8.5A	—	34	—	nC	
Gate-Source Charge	Q _{gs}		—	18	—		
Gate-Drain ("Miller") Charge	Q _{gd}		—	16	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	8.5	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	34	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 8.5A, V _{GS} = 0V	—	—	-1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = 8.5A, V _{GS} = 0V dI _{DR} / dt = 100A / μs	—	350	—	ns
Reverse Recovery Charge	Q _{rr}		—	2.6	—	μC

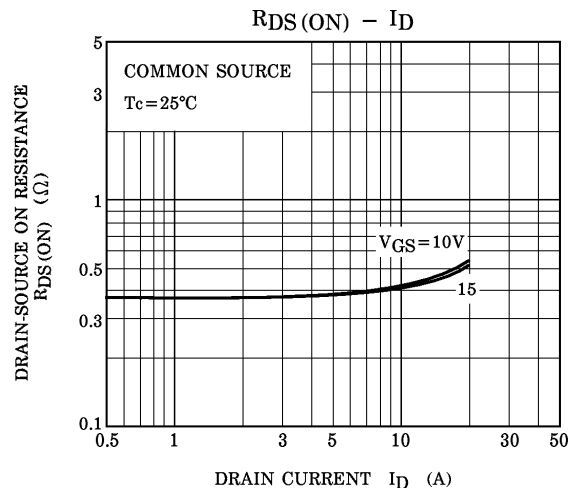
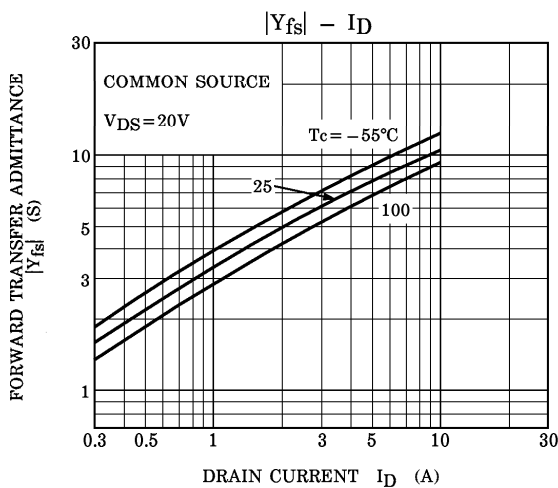
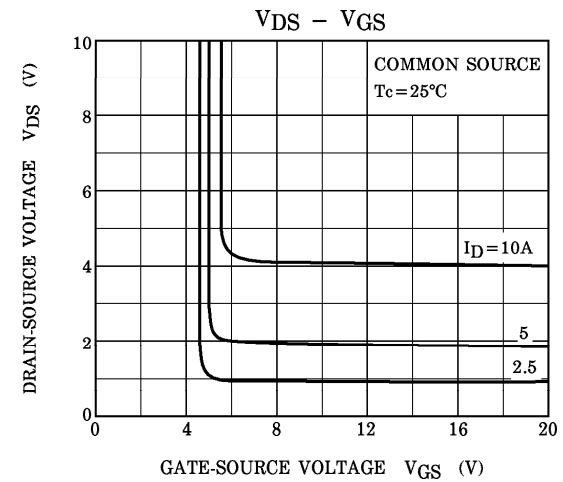
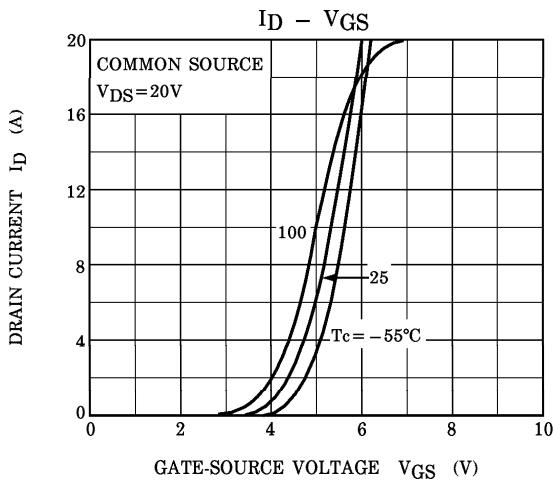
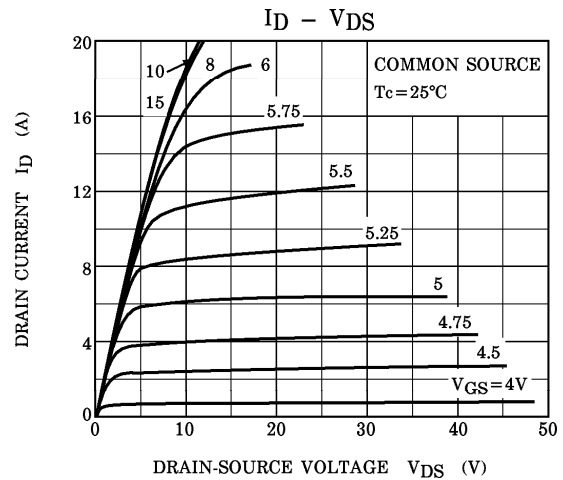
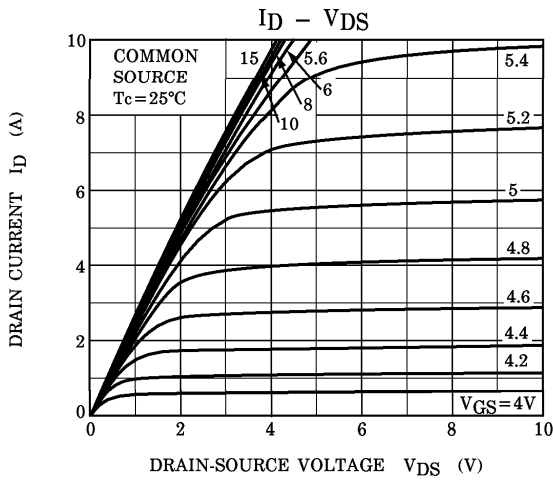
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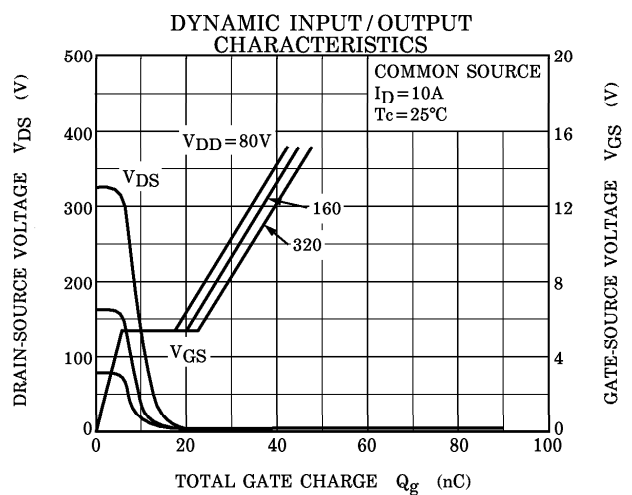
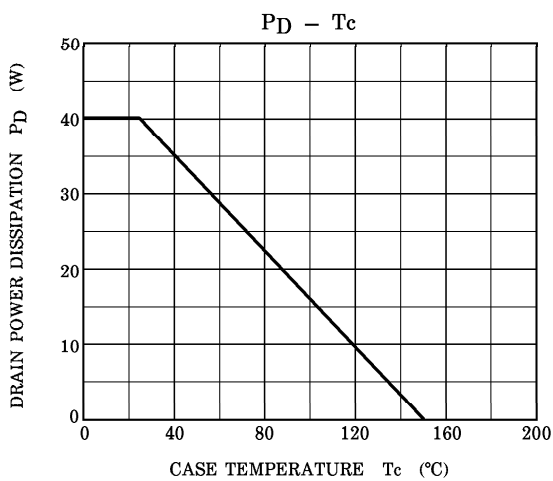
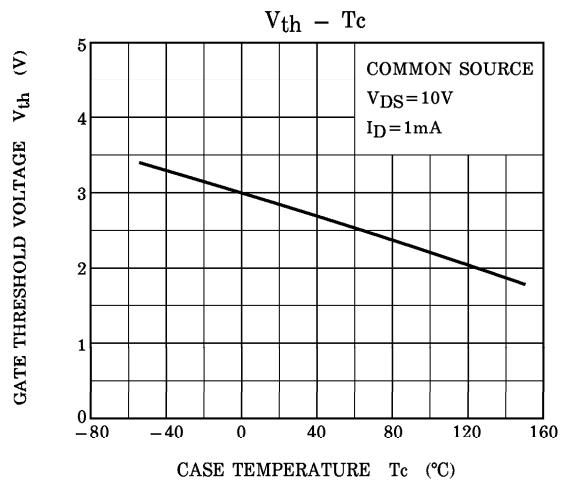
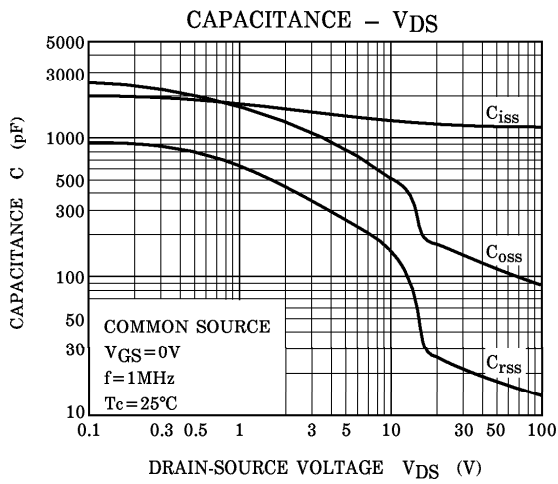
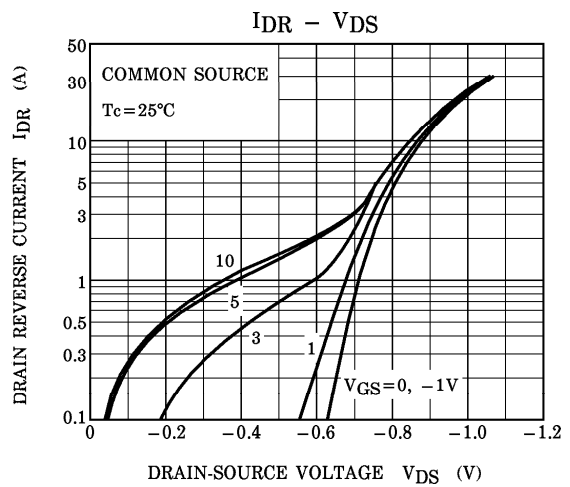
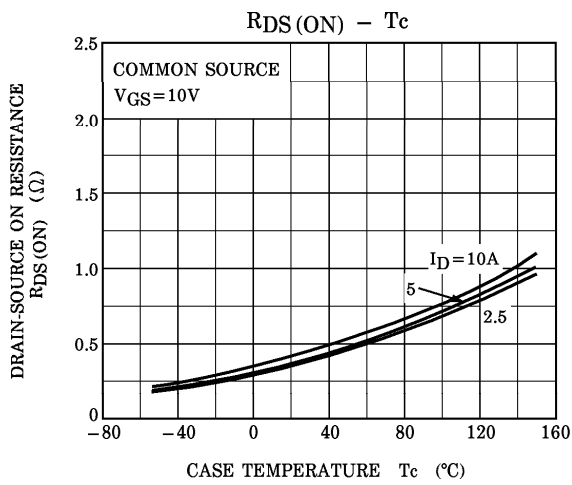


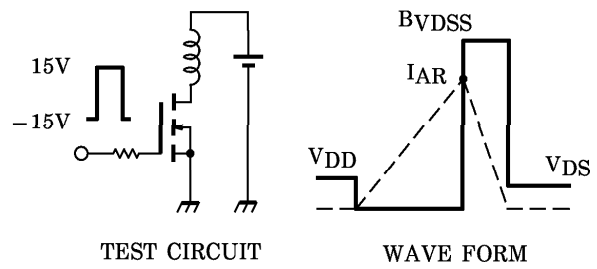
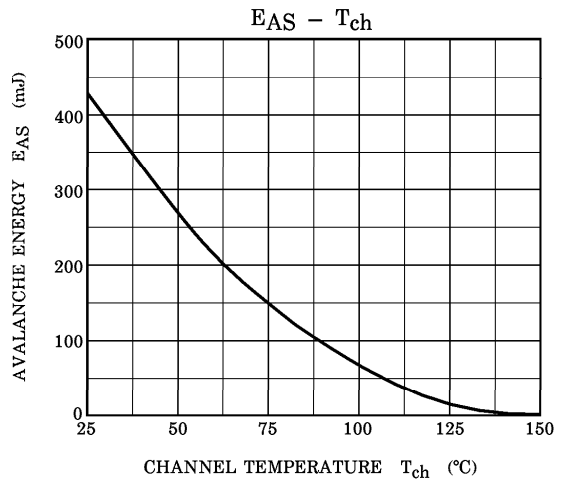
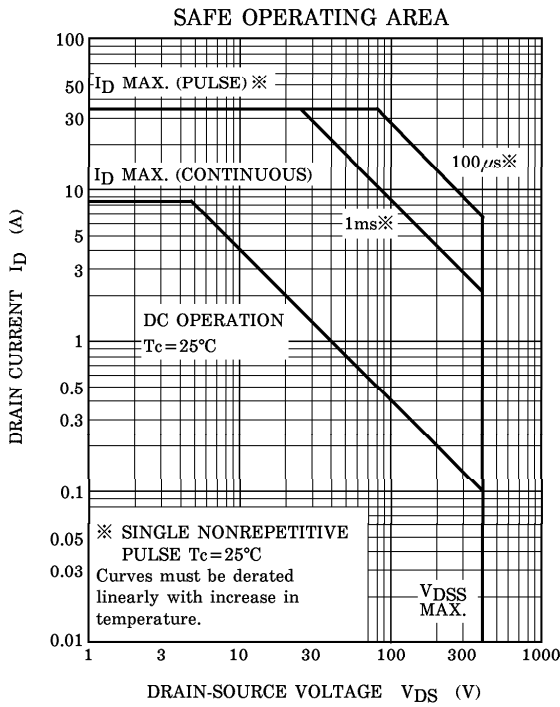
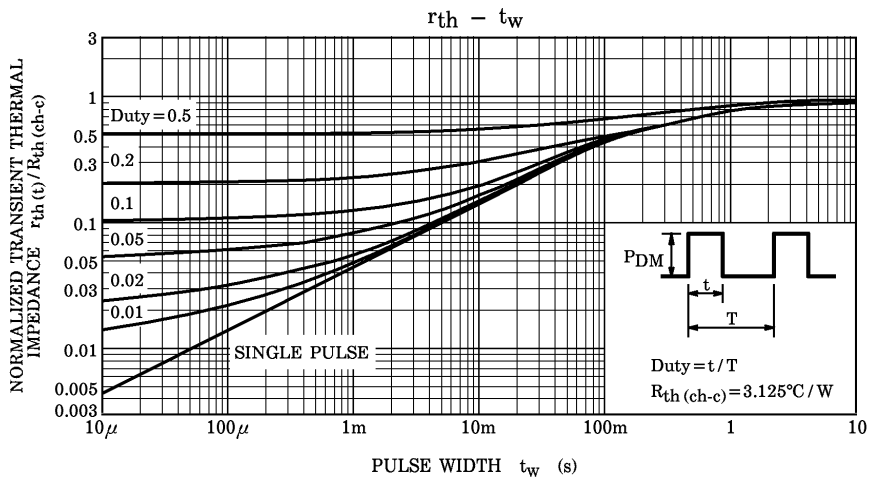
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 8.5A$, $R_G = 25\Omega$
 $V_{DD} = 90V$, $L = 9.6mH$

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