

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

2SK2382

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS
 SWITCHING REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

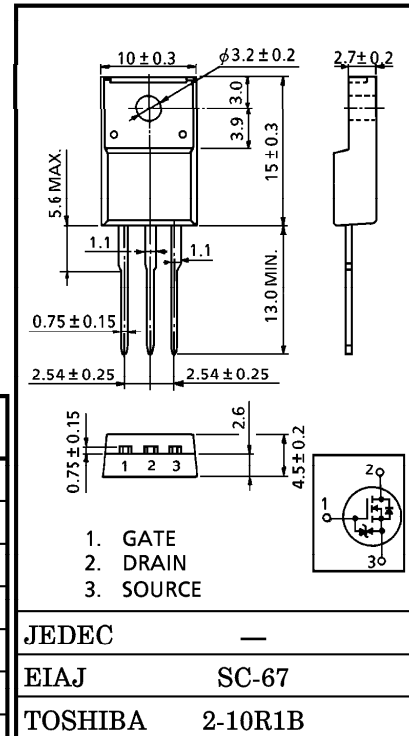
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.13\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 17S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 200V$)
- Enhancement-Mode : $V_{th} = 1.5 \sim 3.5V$ ($V_{DS} = 10V, I_D = 1mA$)

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	200	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	200	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	15	A
	Pulse	I_{DP}	45	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	45	W
Single Pulse Avalanche Energy**		E_{AS}	166	mJ
Avalanche Current		I_{AR}	15	A
Repetitive Avalanche Energy*		E_{AR}	4.5	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 1.9g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel To Case	$R_{th(ch-c)}$	2.78	$^\circ C / W$
Thermal Resistance, Channel To Ambient	$R_{th(ch-a)}$	62.5	$^\circ C / W$

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD} = 50V, T_{ch} = 25^\circ C, L = 1.2mH, R_G = 25\Omega, I_{AR} = 15A$

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

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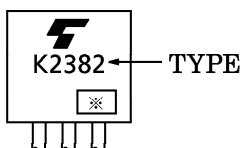
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±16V, VDS = 0V	—	—	±10	μA
Drain Cut-off Current		IDSS	VDS = 200V, VGS = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 10mA, VGS = 0V	200	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	1.5	—	3.5	V
Drain-Source ON Resistance		RDS(ON)	VGS = 10V, ID = 10A	—	0.13	0.18	Ω
Forward Transfer Admittance		Yfs	VDS = 10V, ID = 10A	10	17	—	S
Input Capacitance		Ciss	VDS = 10V, VGS = 0V, f = 1MHz	—	2000	—	pF
Reverse Transfer Capacitance		Crss		—	200	—	
Output Capacitance		Coss		—	600	—	
Switching Time	Rise Time	tr	<p> V_{GS} 10V 0V $I_D = 10A$ V_{OUT} $R_L = 10\Omega$ $V_{DD} \cong 100V$ $V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$ </p>	—	35	—	ns
	Turn-on Time	ton		—	50	—	
	Fall Time	tf		—	10	—	
	Turn-off Time	t _{off}		—	66	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD ≅ 100V, VGS = 10V ID = 15A	—	40	—	nC
Gate-Source Charge		Qgs		—	25	—	
Gate-Drain (“Miller”) Charge		Qgd		—	15	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	15	A
Pulse Drain Reverse Current	IDRP	—	—	—	45	A
Diode Forward Voltage	VDSF	IDR = 15A, VGS = 0V	—	—	-2.0	V
Reverse Recovery Time	t _{rr}	IDR = 15A, VGS = 0V	—	180	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 100A / μs	—	1.13	—	μC

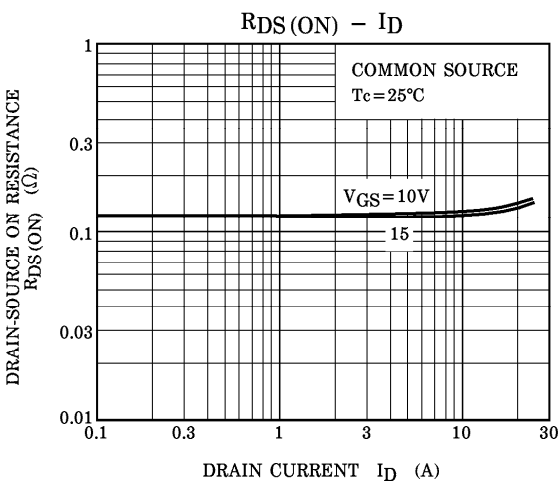
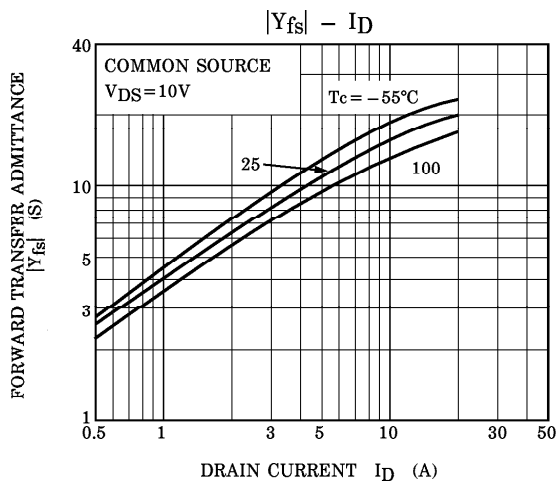
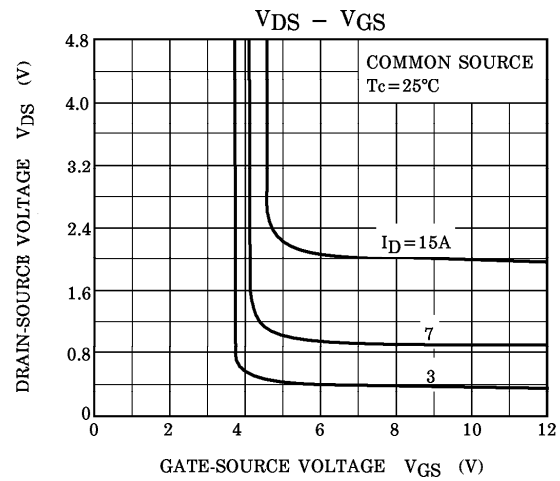
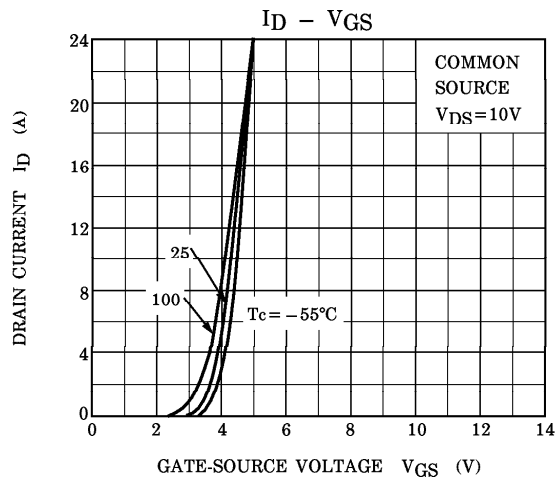
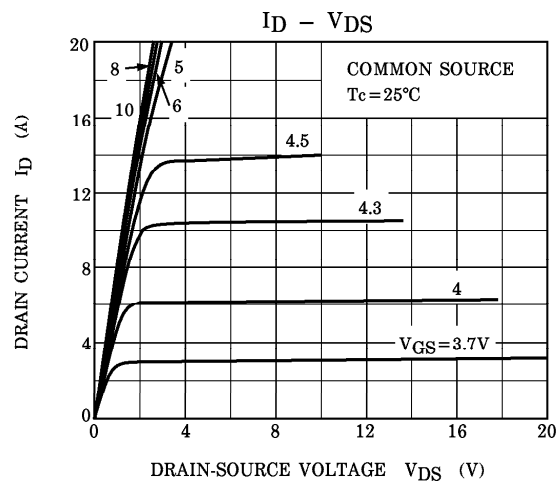
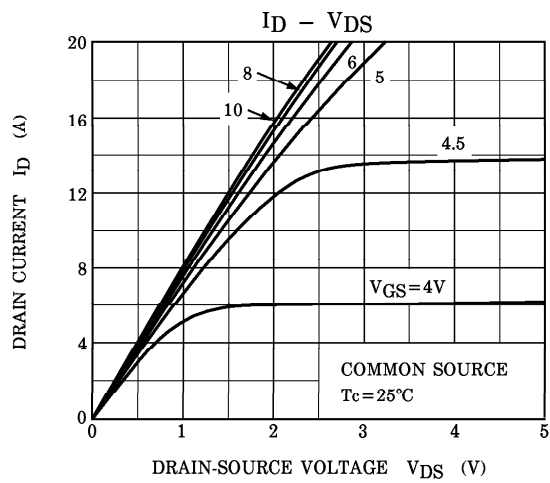
MARKING

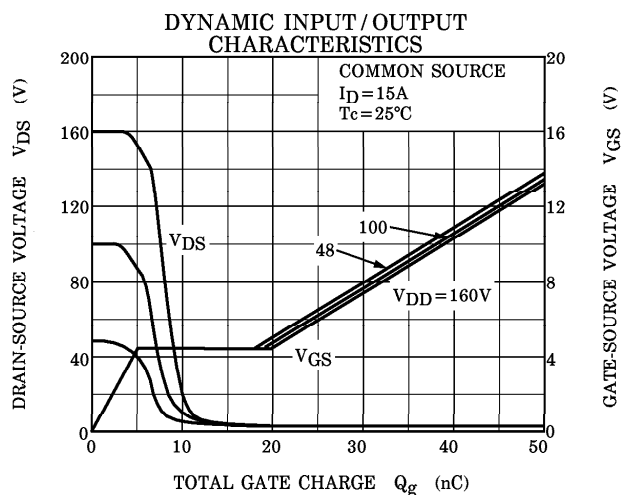
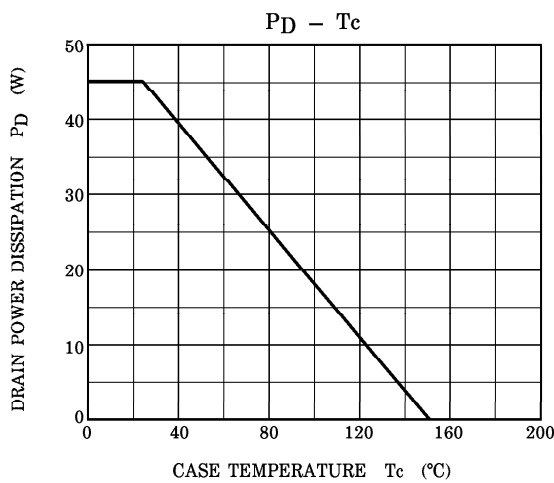
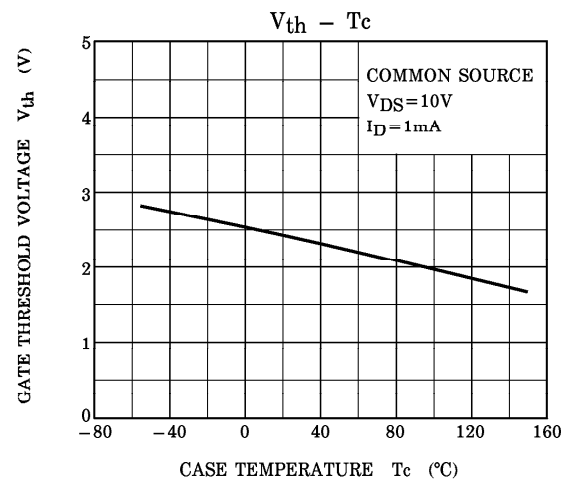
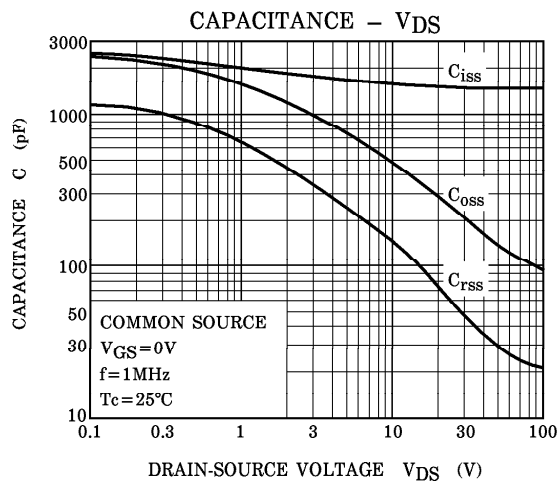
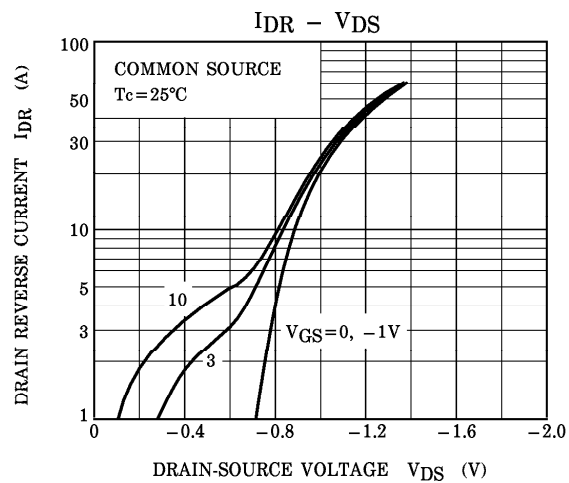
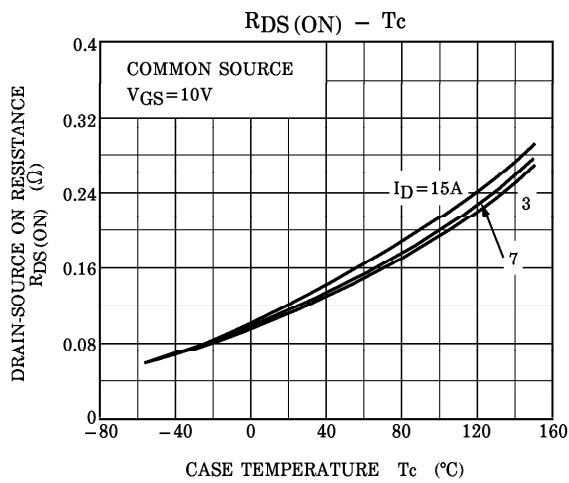


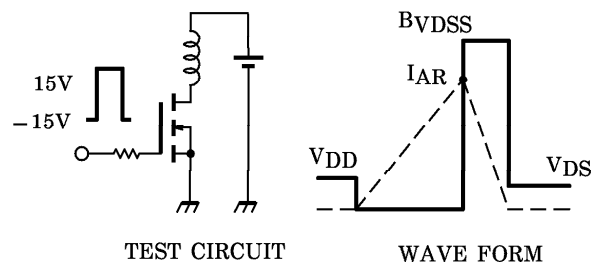
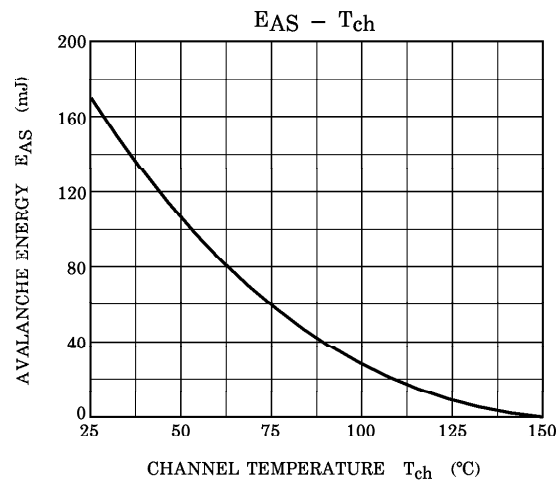
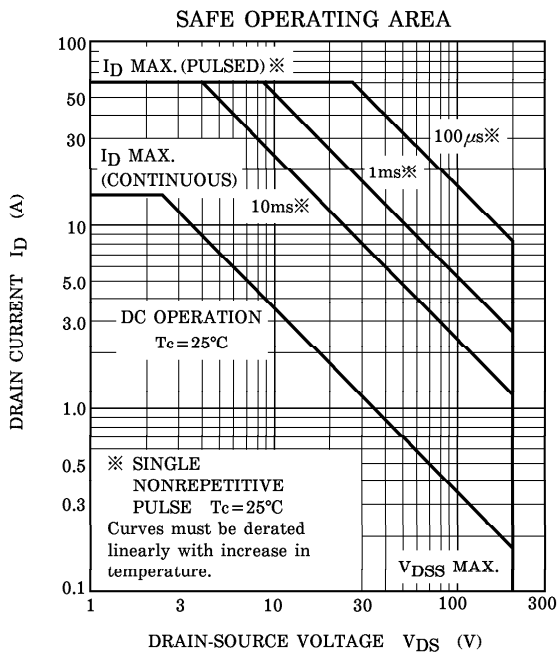
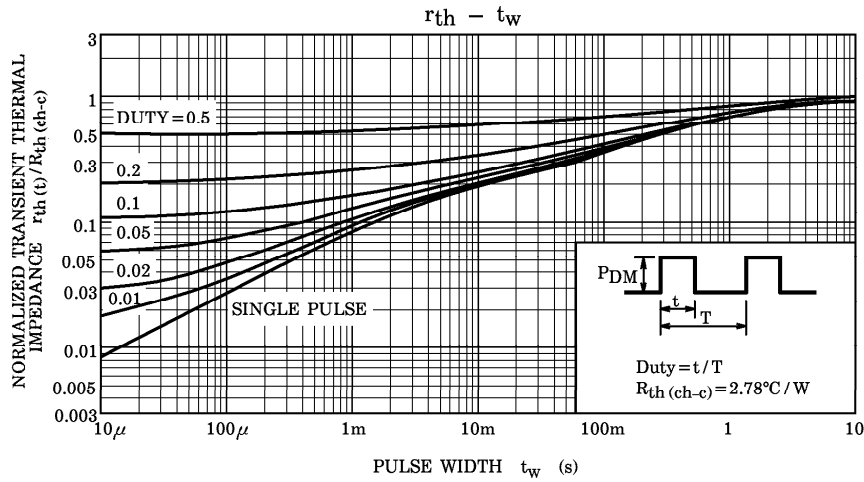
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 15A$, $R_G = 25\Omega$
 $V_{DD} = 50V$, $L = 1.2mH$

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