

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

2SK2698

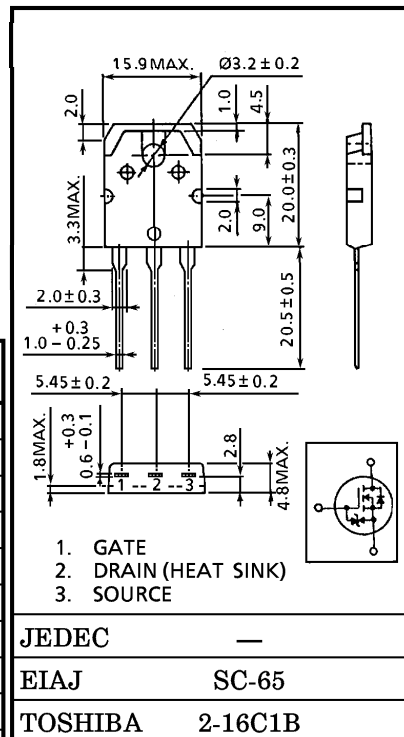
HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.35\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 11S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 500V$)
- 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}	500	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	500	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	15
	Pulse	I_{DP}	60
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	150	W
Single Pulse Avalanche Energy**	E_{AS}	630	mJ
Avalanche Current	I_{AR}	15	A
Repetitive Avalanche Energy*	E_{AR}	15	mJ
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$



Weight : 4.6g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.833	$^\circ C / W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ C / W$

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD} = 90V$, Starting $T_{ch} = 25^\circ C$, $L = 4.76mH$, $R_G = 25\Omega$, $I_{AR} = 15A$

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

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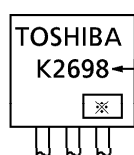
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	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} = 500V, V _{GS} = 0V	—	—	100	μA	
Drain-Source Breakdown Voltage	V (BR) DSS	I _D = 10mA, V _{GS} = 0V	500	—	—	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 = 7.0A	—	0.35	0.4	Ω	
Forward Transfer Admittance	Y _{fs}	V _{DS} = 10V, I _D = 7.0A	6	11	—	S	
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz	—	2600	—	pF	
Reverse Transfer Capacitance	C _{rss}		—	280	—		
Output Capacitance	C _{oss}		—	880	—		
Switching Time	Rise Time	t _r	<p>V_{GS} 10V 0V 50Ω I_D = 7A V_{OUT} R_L = 30Ω V_{DD} ≐ 210V</p>	—	50	—	ns
	Turn-on Time	t _{on}		—	85	—	
	Fall Time	t _f		—	65	—	
	Turn-off Time	t _{off}		V _{IN} : t _r , t _f < 5ns, Duty ≤ 1%, t _w = 10μs	—	260	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	V _{DD} ≐ 400V, V _{GS} = 10V, I _D = 15A	—	58	—	nC	
Gate-Source Charge	Q _{gs}		—	36	—		
Gate-Drain (“Miller”) Charge	Q _{gd}		—	22	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	15	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	60	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 15A, V _{GS} = 0V	—	—	-1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = 15A, V _{GS} = 0V dI _{DR} / dt = 100A / μs	—	1200	—	ns
Reverse Recovery Charge	Q _{rr}		—	12	—	μC

MARKING

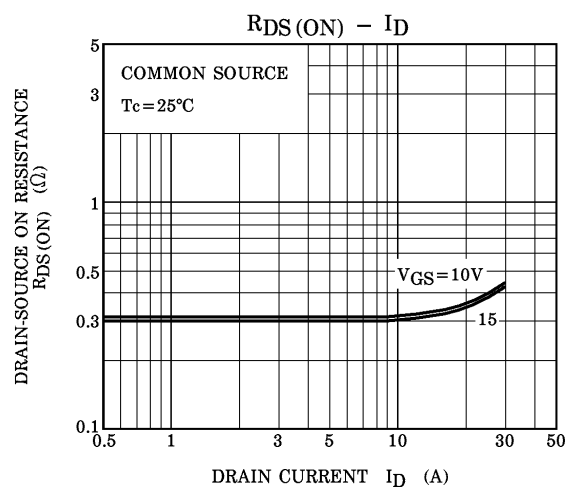
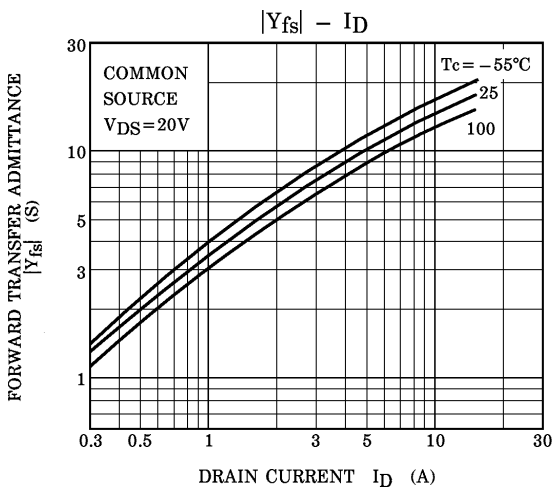
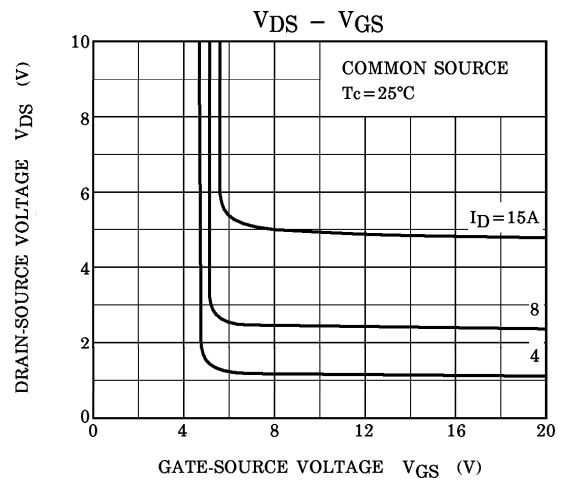
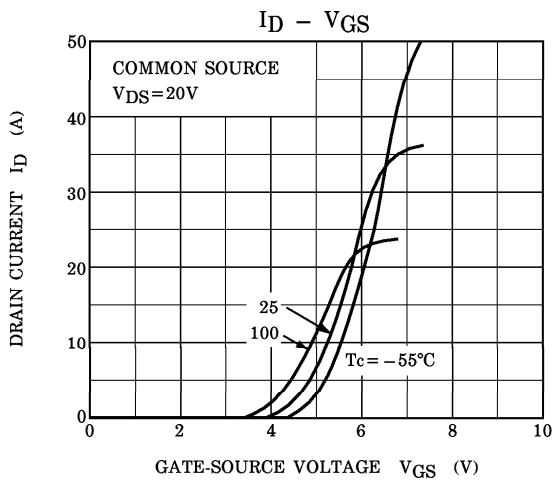
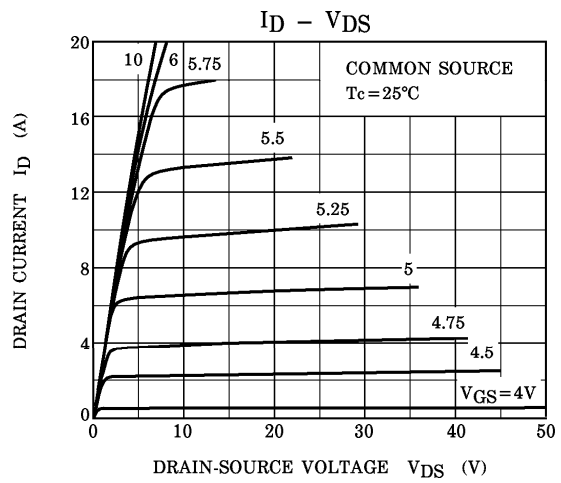
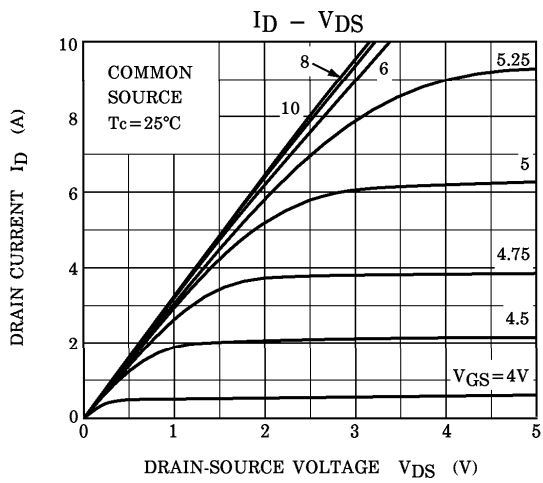


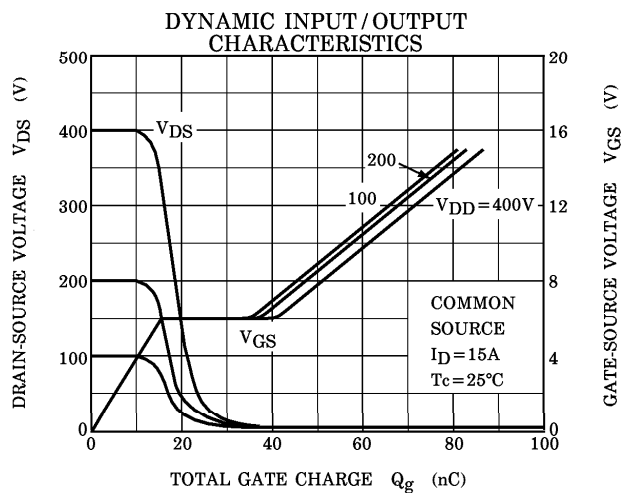
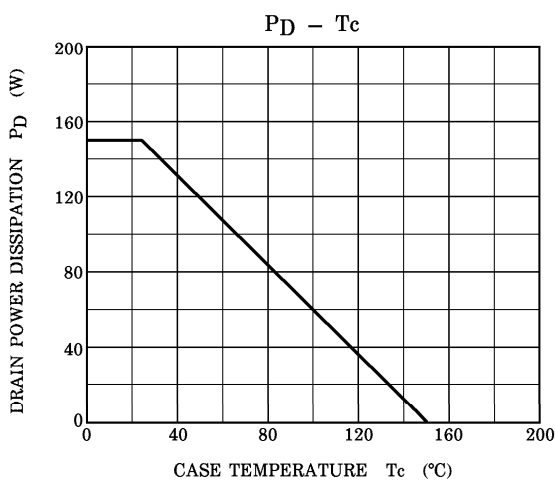
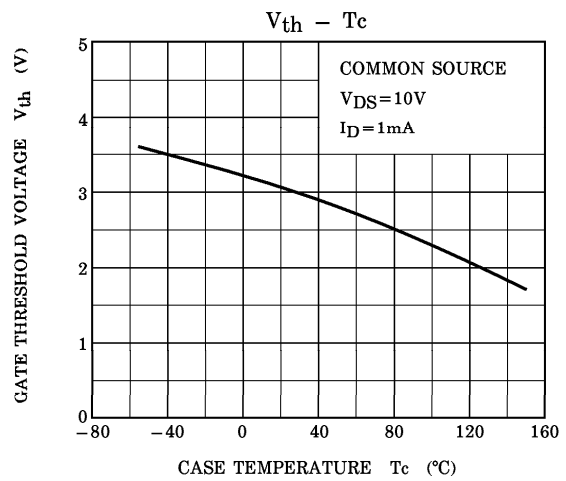
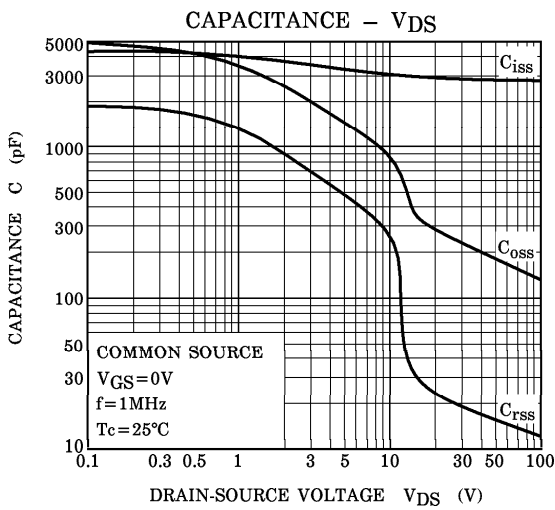
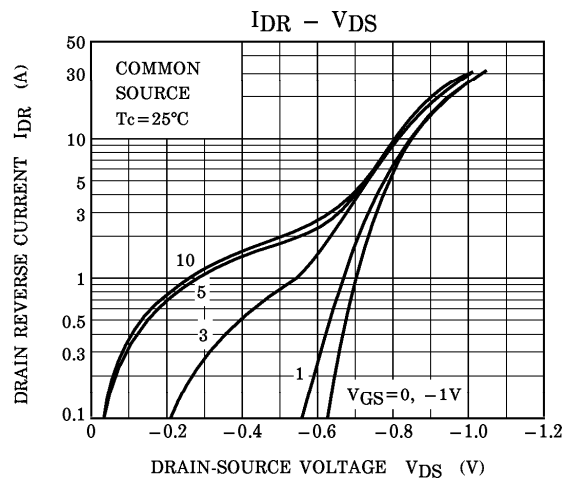
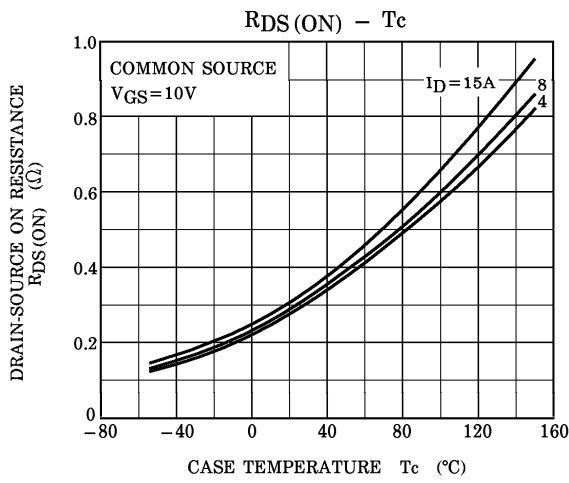
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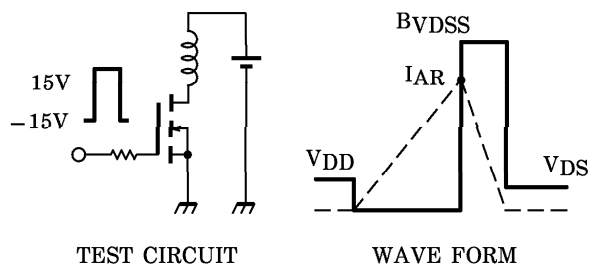
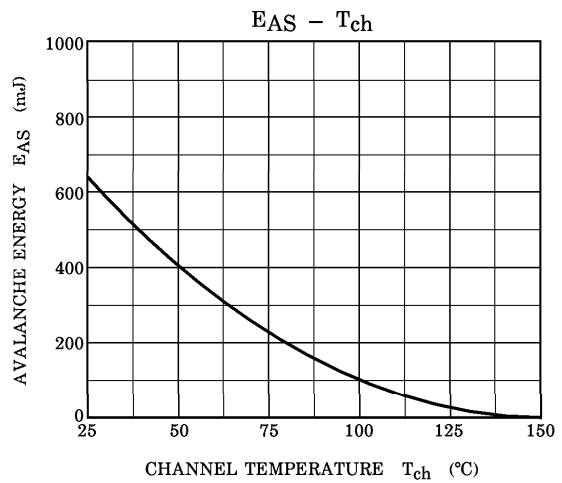
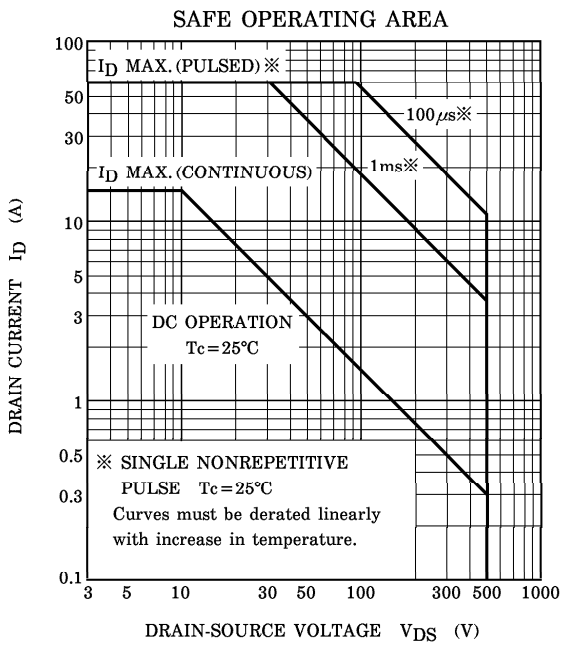
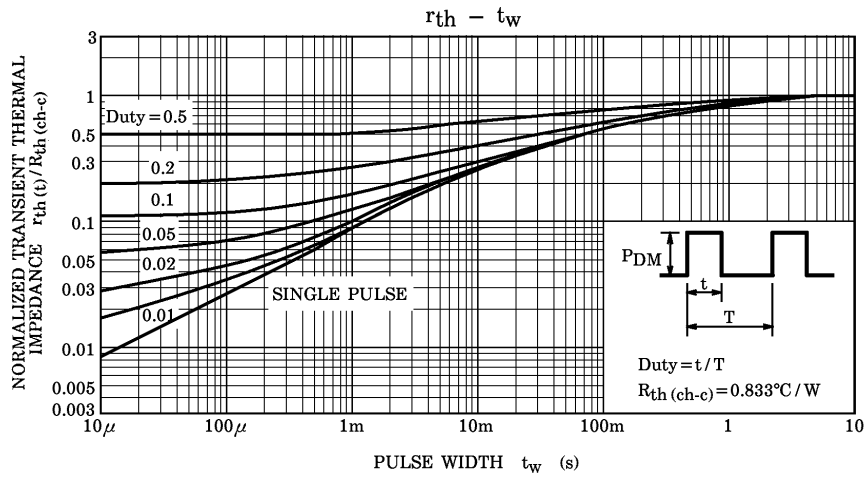
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 15A$, $R_G = 25\Omega$
 $V_{DD} = 90V$, $L = 4.76mH$

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