

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

2SK2846

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 4.2\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 1.7S$ (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 (Ta = 25°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	2 A
	Pulse (t = 1ms)	I_{DP}	5 A
	Pulse (t = 100μs)	I_{DP}	8 A
Drain Power Dissipation (Ta = 25°C)	P_D	1.3	W
Single Pulse Avalanche Energy**	E_{AS}	93	mJ
Avalanche Current	I_{AR}	2	A
Repetitive Avalanche Energy*	E_{AR}	0.13	mJ
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	96.1	°C/W

Note ;

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

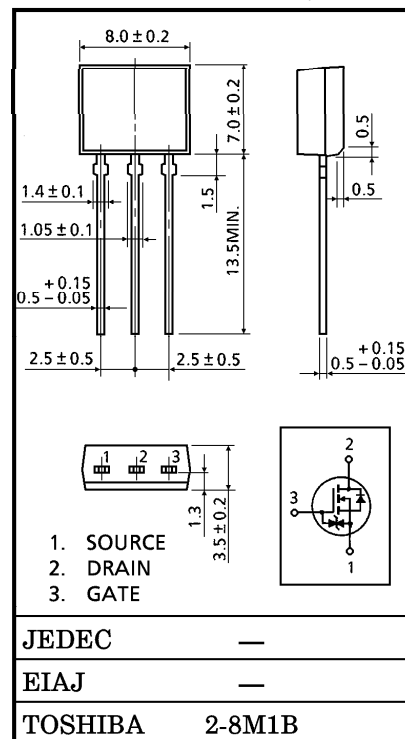
$V_{DD} = 90V$, Starting $T_{ch} = 25^\circ C$, $L = 41mH$, $R_G = 25\Omega$, $I_{AR} = 2A$

This transistor is an electrostatic sensitive device.

Please handle with caution.

INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 0.54g (Typ.)

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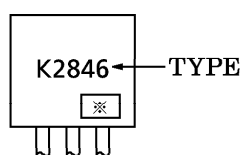
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = ±25V, VDS = 0V	—	—	±10	μA
Gate-Source Breakdown Voltage		V (BR) GSS	ID = 10μA, VGS = 0V	±30	—	—	V
Drain Cut-off Current		IDSS	VDS = 600V, VGS = 0V	—	—	100	μA
Drain-Source Breakdown Voltage		V (BR) DSS	ID = 10mA, VGS = 0V	600	—	—	V
Gate Threshold Voltage		Vth	VDS = 10V, ID = 1mA	2.0	—	4.0	V
Drain-Source ON Resistance		RDS (ON)	VGS = 10V, ID = 1A	—	4.2	5.0	Ω
Forward Transfer Admittance		Yfs	VDS = 10V, ID = 1A	0.8	1.7	—	S
Input Capacitance		Ciss	VDS = 10V, VGS = 0V f = 1MHz	—	380	—	pF
Reverse Transfer Capacitance		Crss		—	40	—	
Output Capacitance		Coss		—	120	—	
Switching Time	Rise Time	tr	<p>VGS 10V 0V ID = 1A Vout RL = 200Ω VDD = 200V</p>	—	15	—	ns
	Turn-on Time	ton		—	25	—	
	Fall Time	tf		—	20	—	
	Turn-off Time	toff		VIN : tr, tf < 5ns, Duty ≤ 1%, tw = 10μs	—	80	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = 480V, VGS = 10V	—	9	—	nC
Gate-Source Charge		Qgs	ID = 2A	—	5	—	
Gate-Drain ("Miller") Charge		Qgd		—	4	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	2	A
Pulse Drain Reverse Current	IDRP	t = 1ms	—	—	5	A
	IDRP	t = 100μs	—	—	8	A
Diode Forward Voltage	VDSF	IDR = 2A, VGS = 0V	—	—	-1.5	V
Reverse Recovery Time	trr	IDR = 2A, VGS = 0V	—	1000	—	ns
Reverse Recovery Charge	Qrr	dIDR / dt = 100A / μs	—	3.5	—	μC

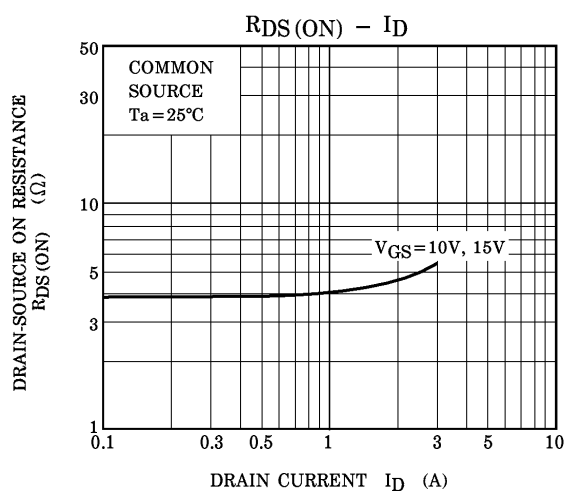
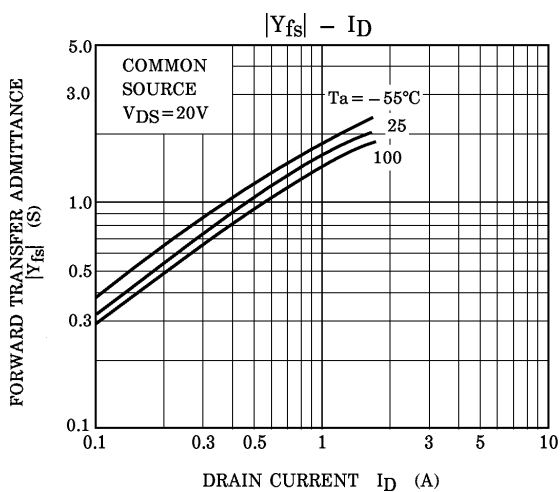
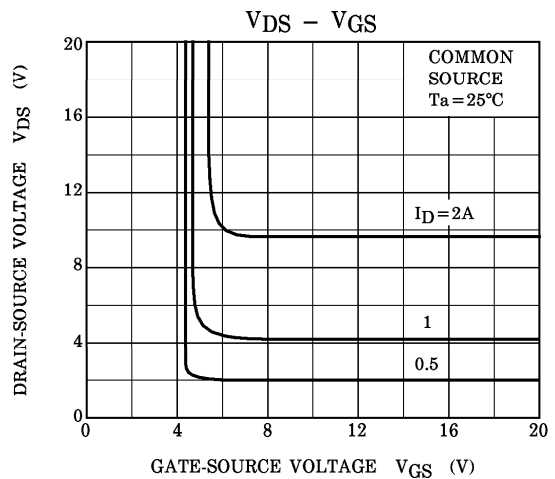
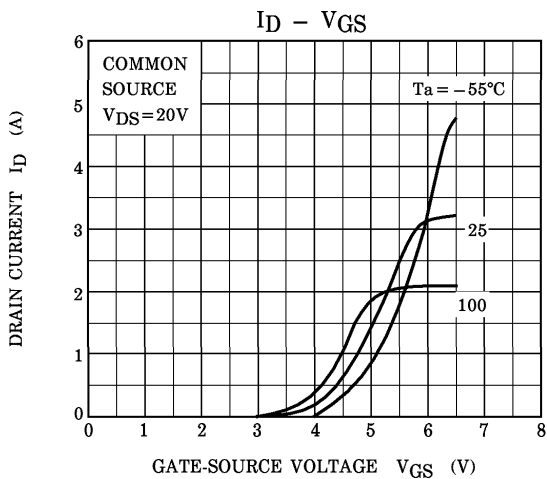
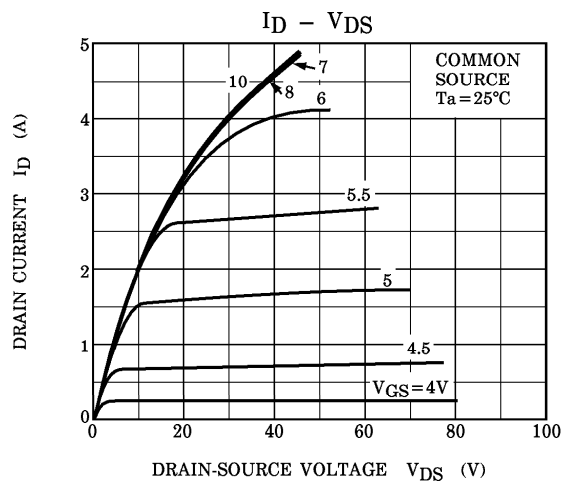
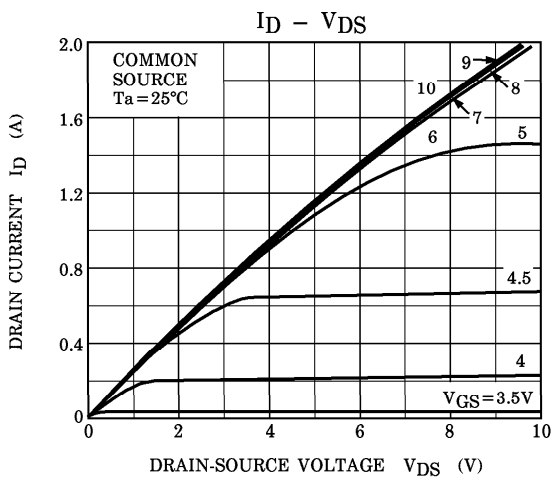
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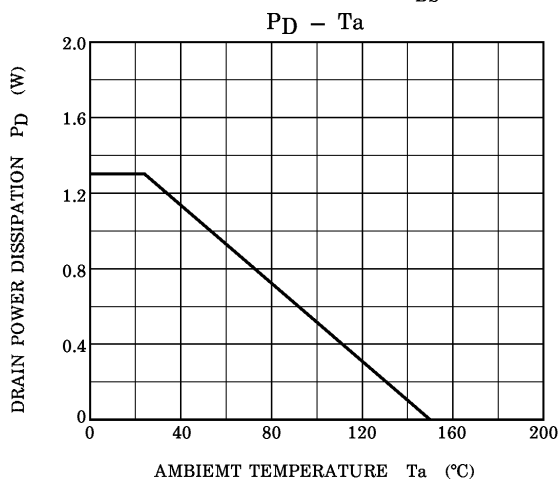
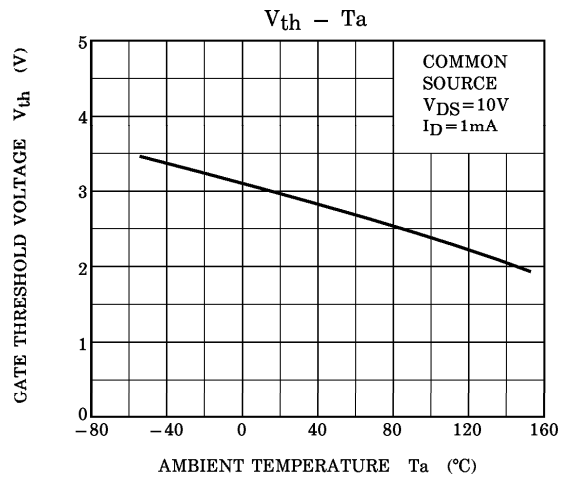
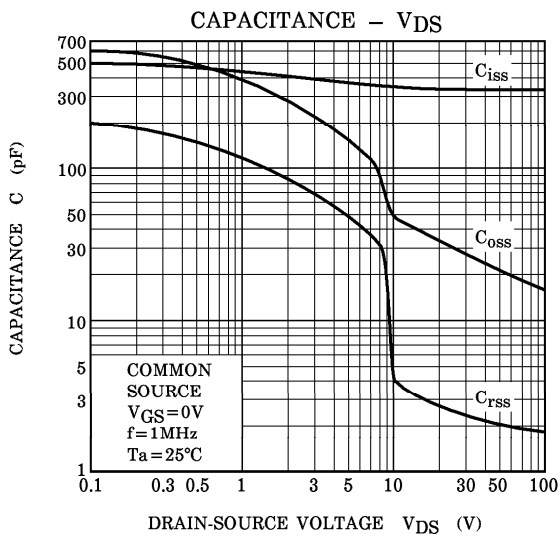
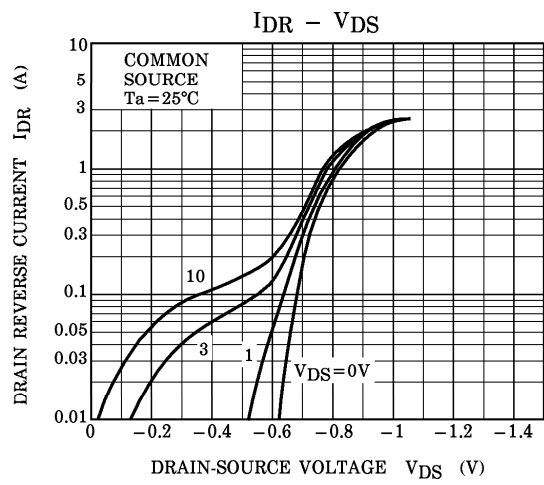
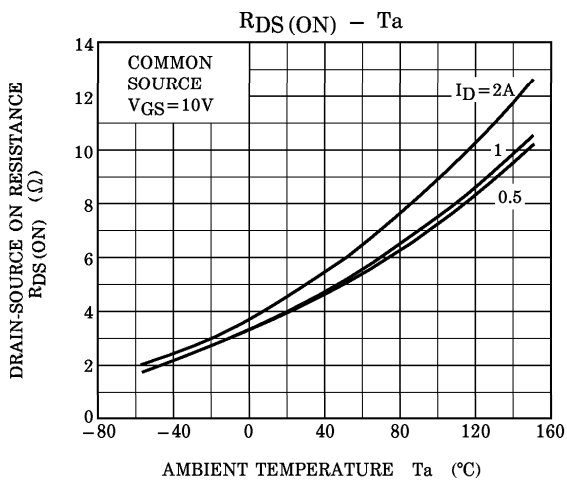


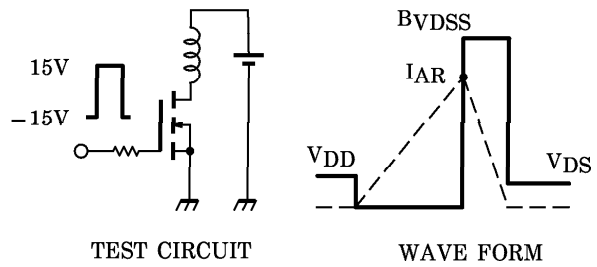
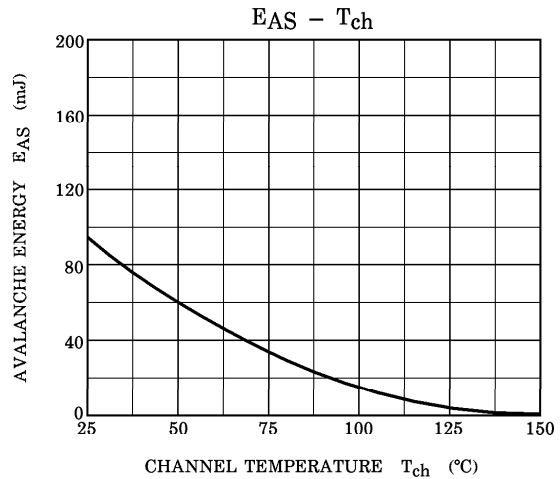
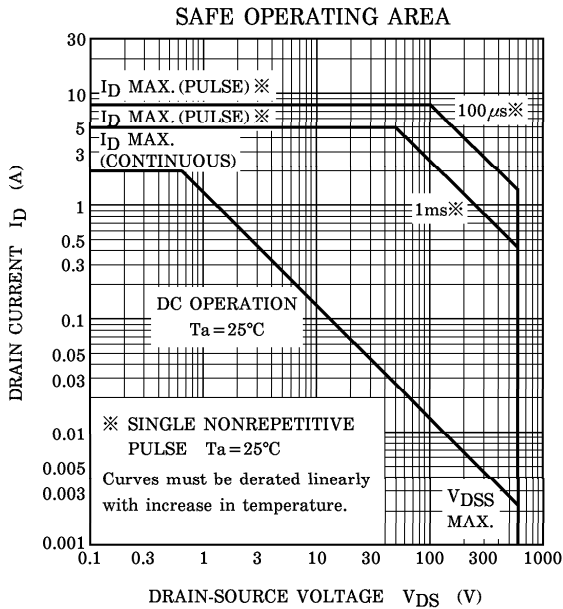
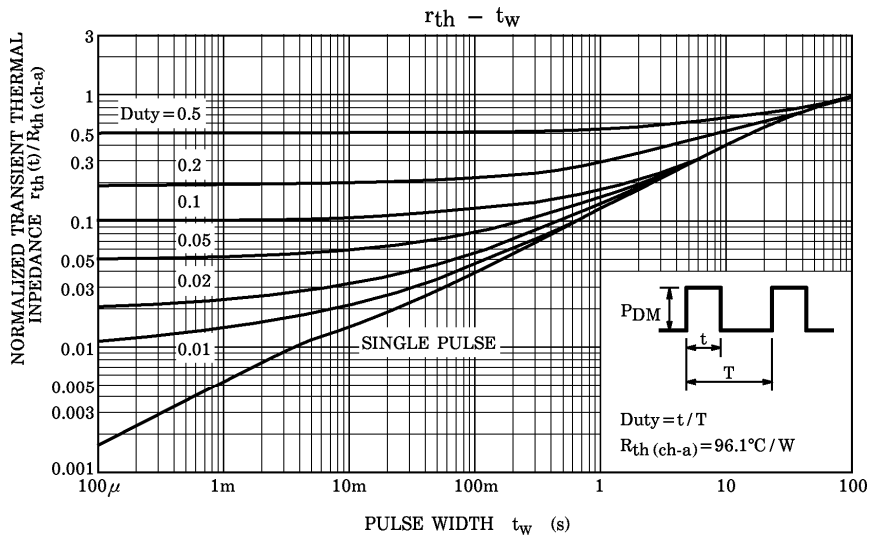
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = 2A$, $R_G = 25\Omega$
 $V_{DD} = 90V$, $L = 41mH$

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