

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

2SK2846

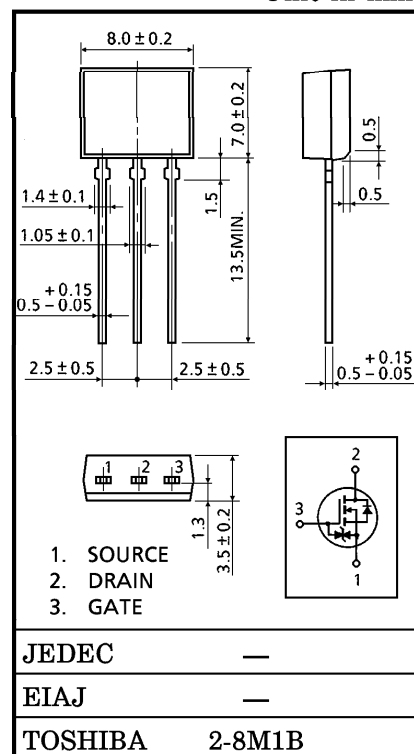
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
 CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
 Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 4.2 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 1.7 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.) ($V_{DS} = 600 V$)
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0 V$
 ($V_{DS} = 10 V, I_D = 1 mA$)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	600	V
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)		V_{DGR}	600	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	2	A
	Pulse (t = 1 ms)	I_{DP}	5	A
	Pulse (t = 100 μs)	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



Weight : 0.54 g (Typ.)

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

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

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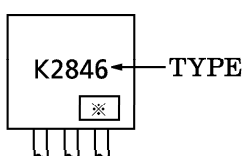
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±25 V, V _{DS} = 0 V	—	—	±10	μA
Gate-Source Breakdown Voltage		V _{(BR)GSS}	I _D = 10 μA, V _{GS} = 0 V	±30	—	—	V
Drain Cut-off Current		I _{DSS}	V _{DS} = 600 V, V _{GS} = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		V _{(BR)DSS}	I _D = 10 mA, V _{GS} = 0 V	600	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = 10 V, I _D = 1 mA	2.0	—	4.0	V
Drain-Source ON Resistance		R _{DS(ON)}	V _{GS} = 10 V, I _D = 1 A	—	4.2	5.0	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} = 10 V, I _D = 1 A	0.8	1.7	—	S
Input Capacitance		C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V f = 1 MHz	—	380	—	pF
Reverse Transfer Capacitance		C _{rss}		—	40	—	
Output Capacitance		C _{oss}		—	120	—	
Switching Time	Rise Time	t _r		—	15	—	ns
	Turn-on Time	t _{on}		—	25	—	
	Fall Time	t _f		—	20	—	
	Turn-off Time	t _{off}		—	80	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} ≐ 480 V, V _{GS} = 10 V I _D = 2 A	—	9	—	nC
Gate-Source Charge		Q _{gs}		—	5	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	4	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	2	A
Pulse Drain Reverse Current	I _{DRP}	t = 1 ms	—	—	5	A
	I _{DRP}	t = 100 μs	—	—	8	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 2 A, V _{GS} = 0 V	—	—	-1.5	V
Reverse Recovery Time	t _{rr}	I _{DR} = 2 A, V _{GS} = 0 V	—	1000	—	ns
Reverse Recovery Charge	Q _{rr}	dI _{DR} / dt = 100 A / μs	—	3.5	—	μC

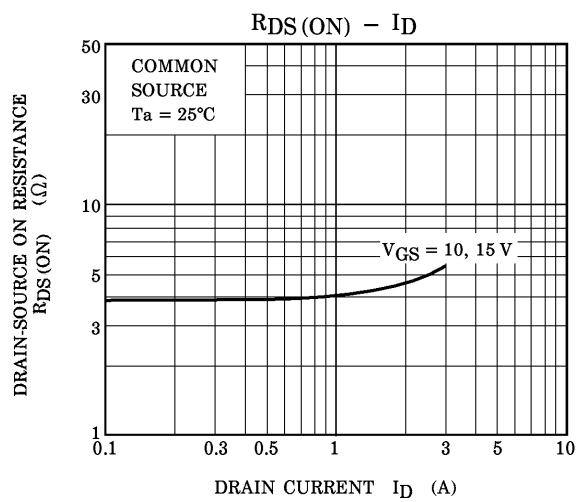
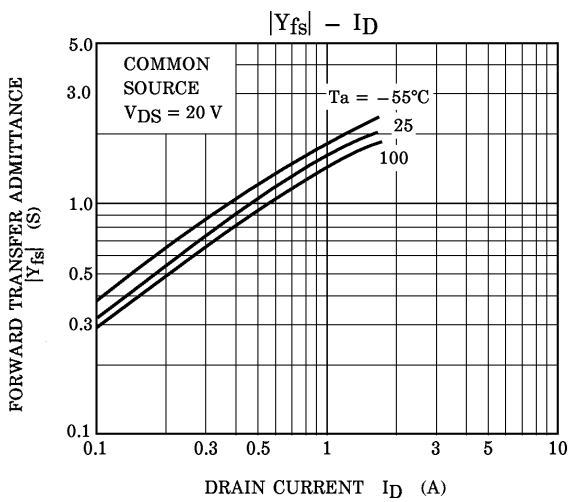
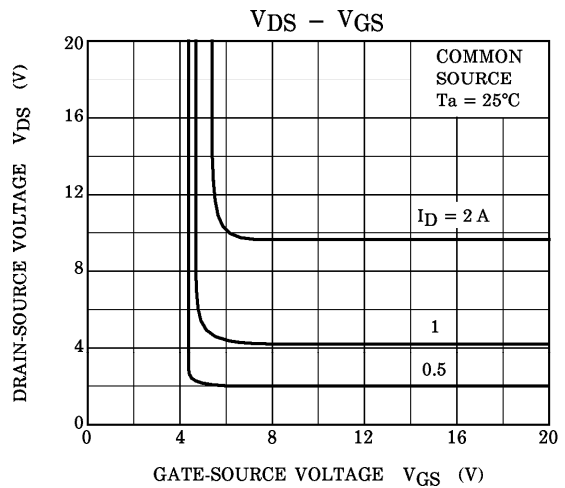
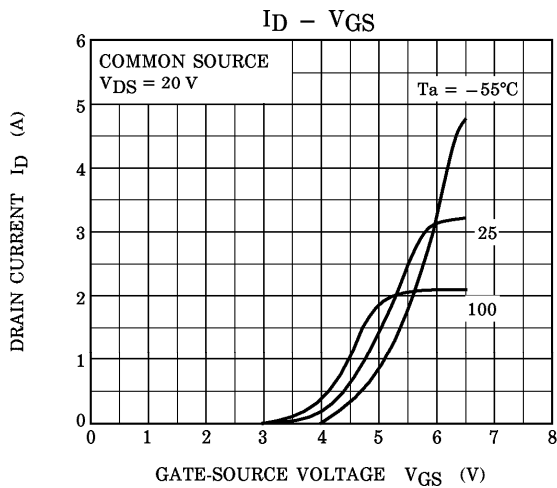
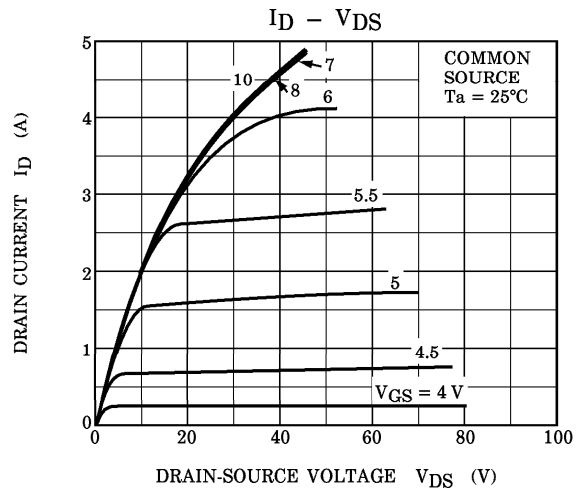
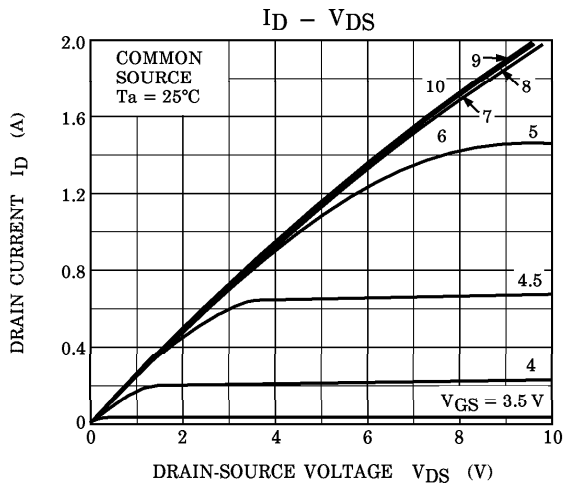
MARKING

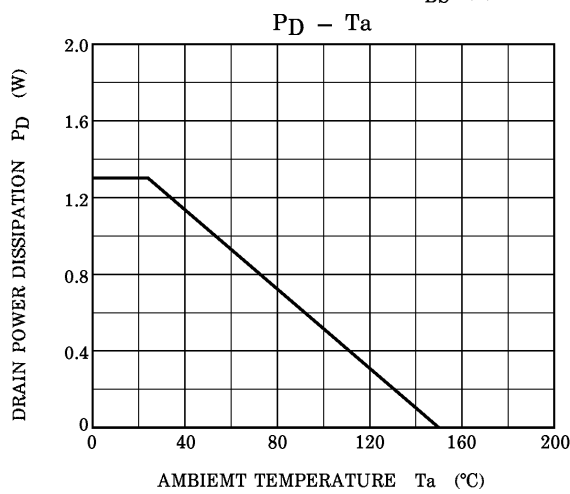
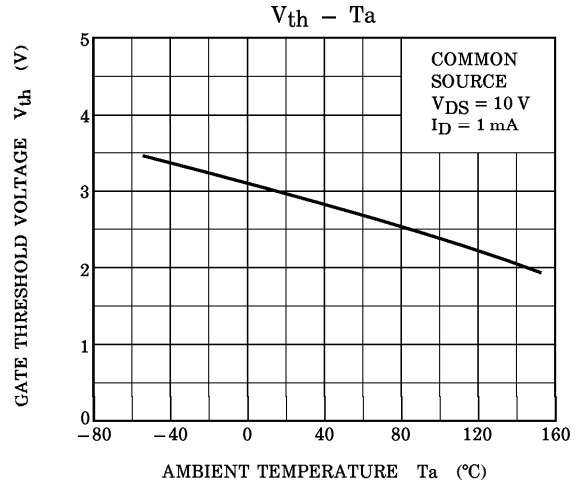
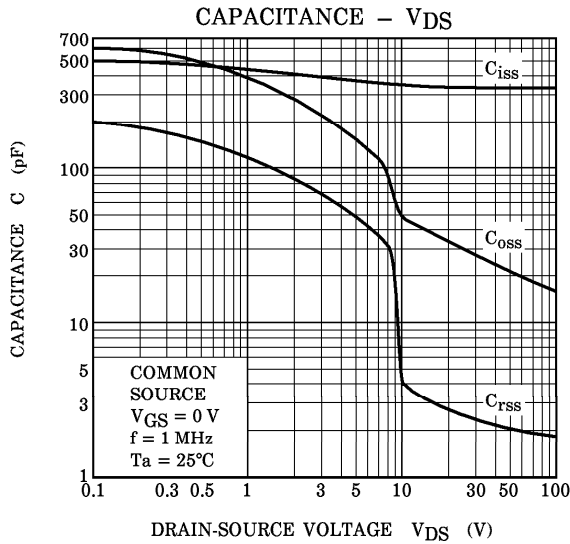
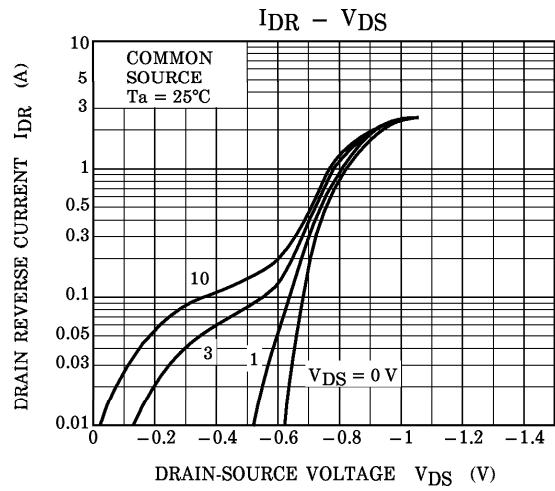
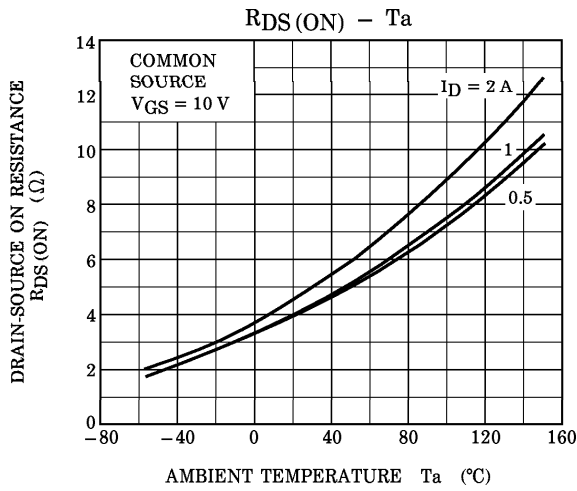


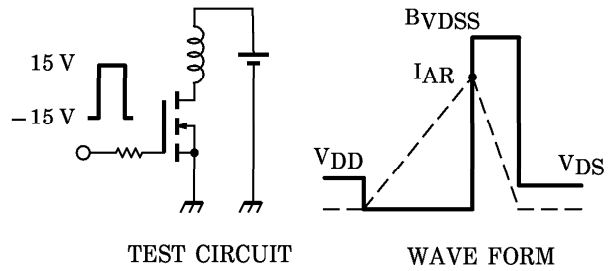
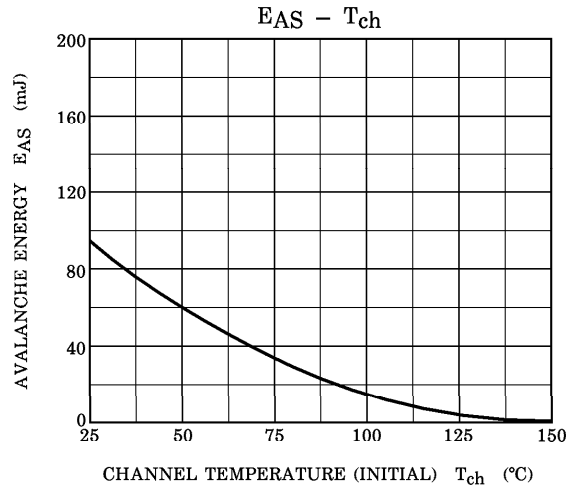
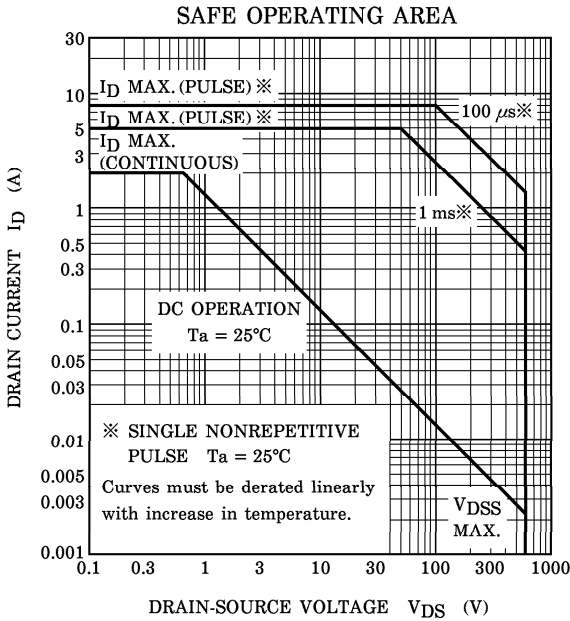
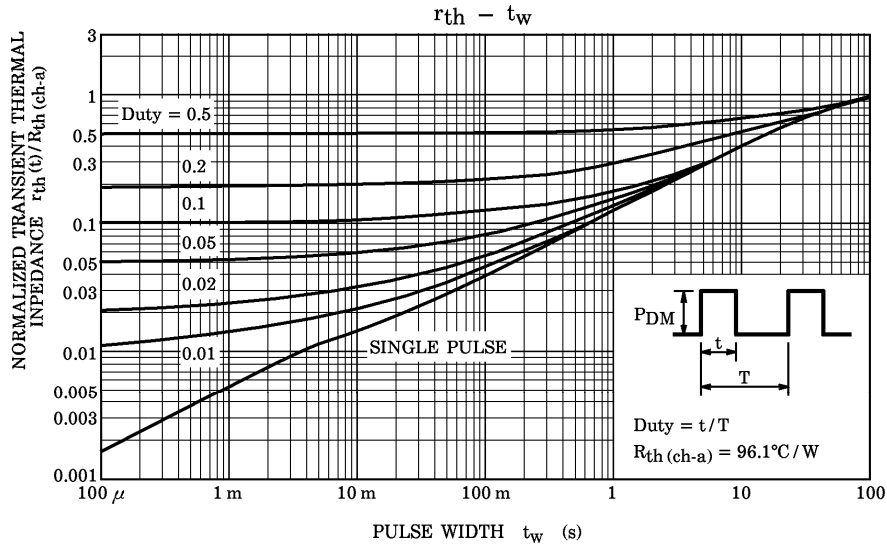
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







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

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