

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE ( $\pi$ -MOS $\nu$ )

# 2SK2835

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

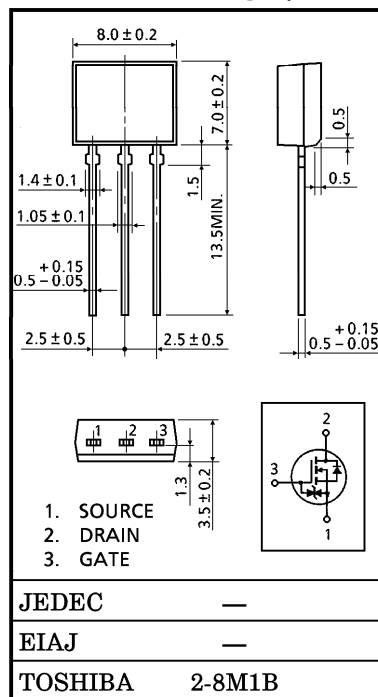
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 0.56\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 4.5S$  (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		$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	5	A
	Pulse	$I_{DP}$	20	
Drain Power Dissipation ( $T_a = 25^\circ C$ )		$P_D$	1.3	W
Single Pulse Avalanche Energy**		$E_{AS}$	65	mJ
Avalanche Current		$I_{AR}$	5	A
Repetitive Avalanche Energy*		$E_{AR}$	0.13	mJ
Channel Temperature		$T_{ch}$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	$-55 \sim 150$	$^\circ C$



Weight : 0.54g

THERMAL CHARACTERISTICS

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

Note ;

- \* Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- \*\*  $V_{DD} = 50V$ , Starting  $T_{ch} = 25^\circ C$ ,  $L = 4.2mH$ ,  $R_G = 25\Omega$ ,  $I_{AR} = 5A$

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

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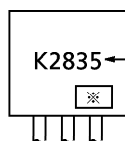
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		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 = 2.5A	—	0.56	0.8	Ω
Forward Transfer Admittance		Yfs	VDS = 10V, ID = 2.5A	2.0	4.5	—	S
Input Capacitance		Ciss	VDS = 10V, VGS = 0V f = 1MHz	—	440	—	pF
Reverse Transfer Capacitance		Crss		—	35	—	
Output Capacitance		Coss		—	120	—	
Switching Time	Rise Time	tr	<p>                     ID = 2.5A                      VGS = 10V, 0V                      RL = 40Ω                      VDD = 100V                      VIN : tr, tf &lt; 5ns,                      Duty ≤ 1%, tw = 10μs                 </p>	—	15	—	ns
	Turn-on Time	ton		—	20	—	
	Fall Time	tf		—	15	—	
	Turn-off Time	toff		—	60	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	VDD = 100V, VGS = 10V	—	10	—	nC
Gate-Source Charge		Qgs	ID = 5A	—	6	—	
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	—	—	—	5	A
Pulse Drain Reverse Current	IDRP	—	—	—	20	A
Diode Forward Voltage	VDSF	IDR = 5A, VGS = 0V	—	—	-2.0	V
Reverse Recovery Time	trr	IDR = 5A, VGS = 0V	—	150	—	ns
Reverse Recovery Charge	Qrr	dIDR / dt = 100A / μs	—	0.45	—	μC

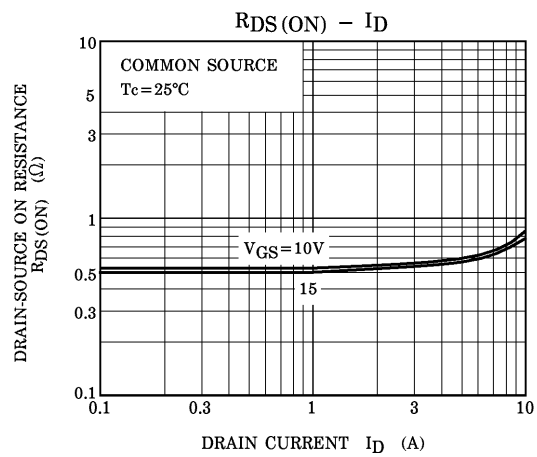
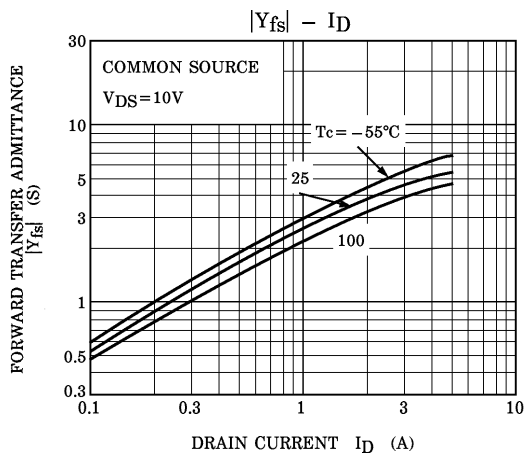
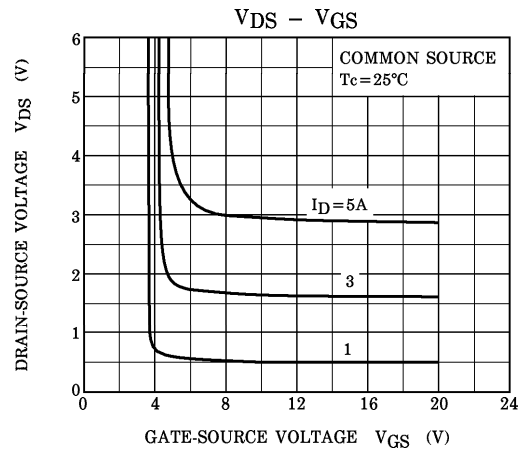
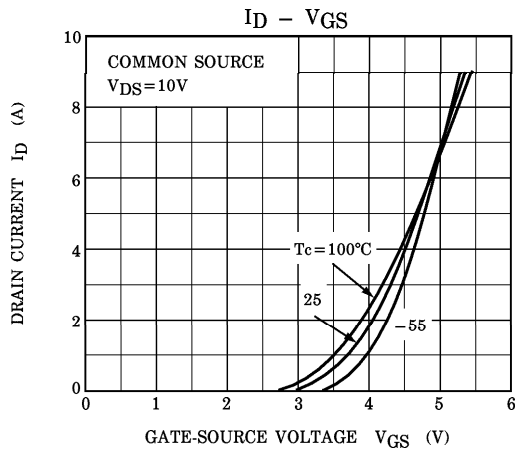
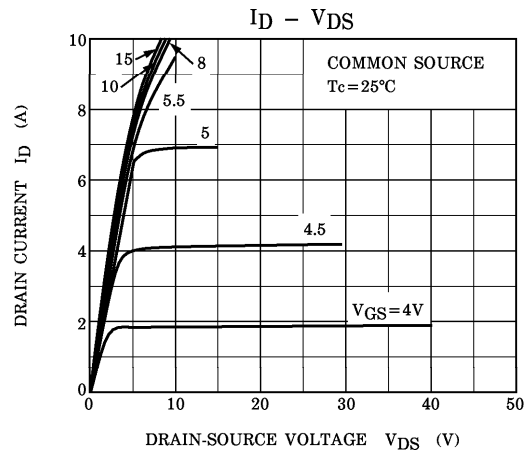
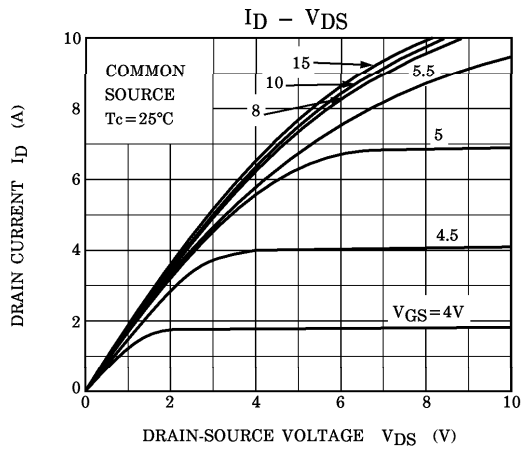
MARKING

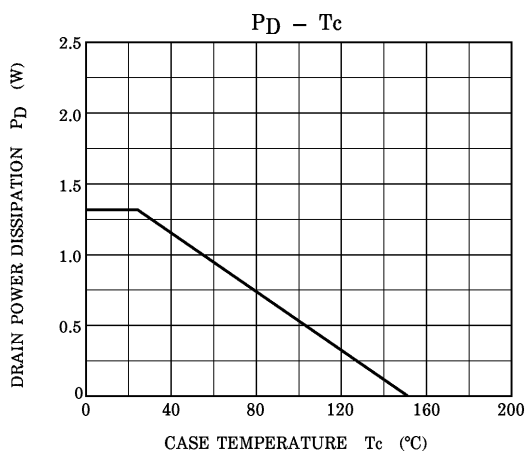
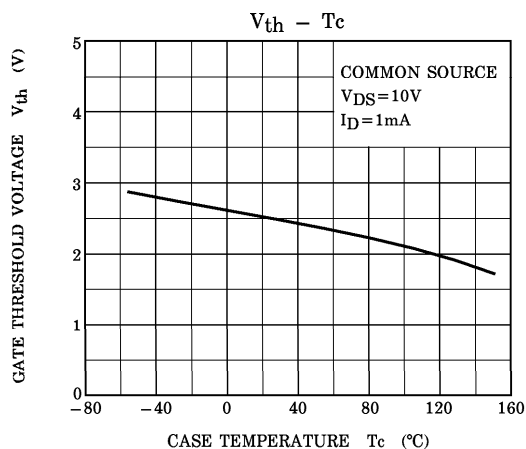
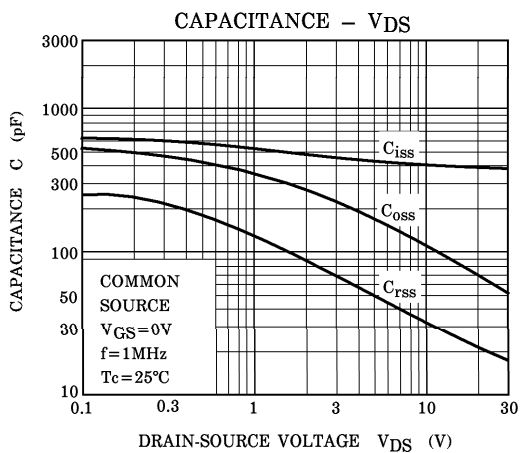
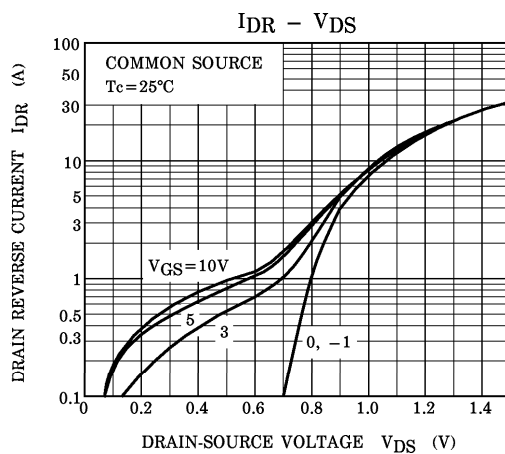
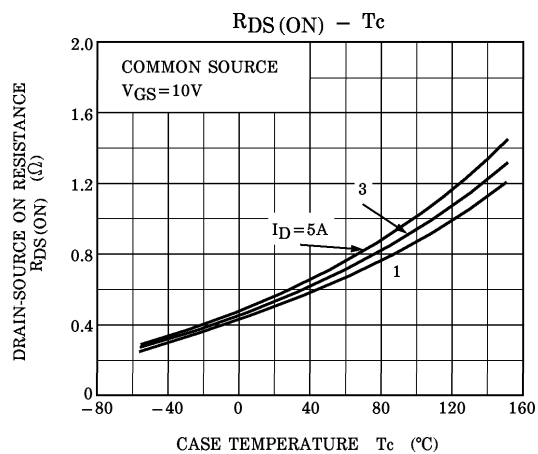


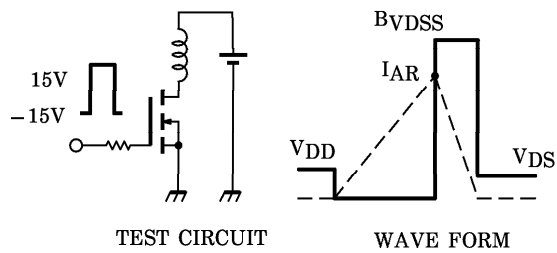
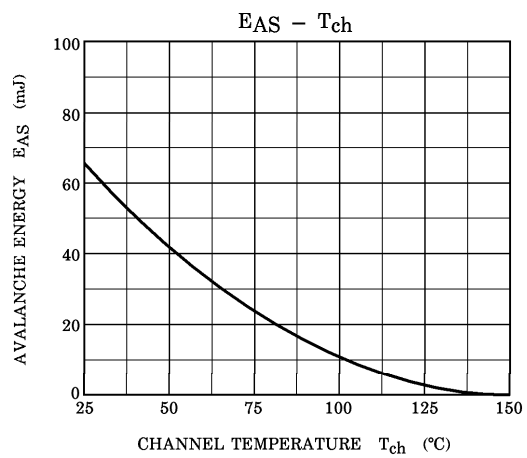
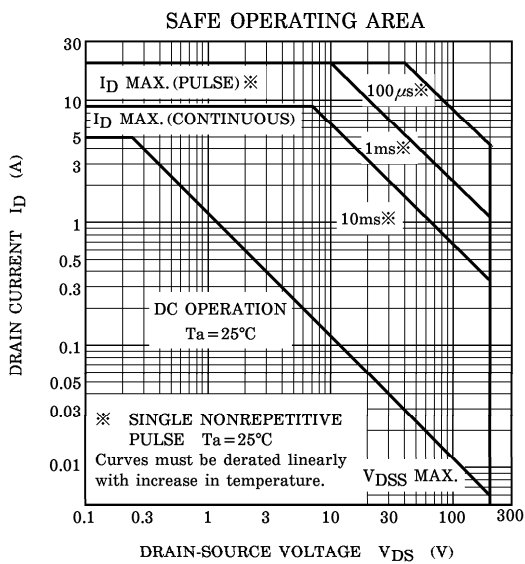
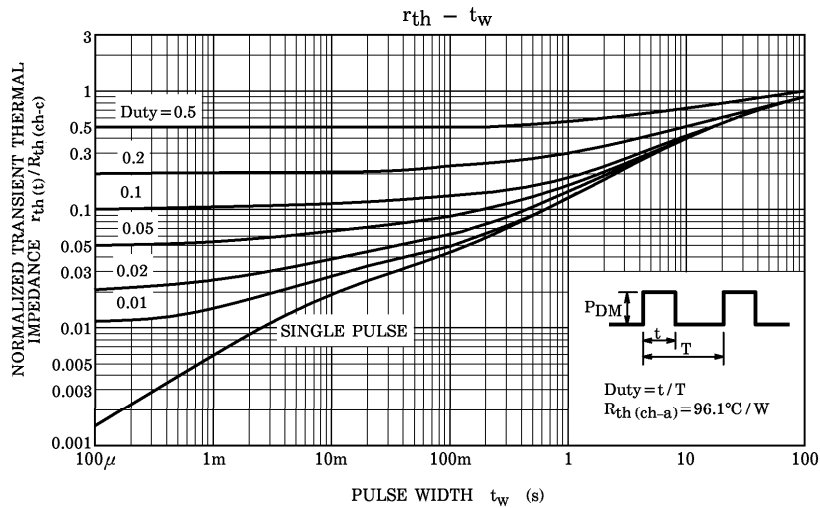
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak  $I_{AR} = 5A$ ,  $R_G = 25\Omega$   
 $V_{DD} = 25V$ ,  $L = 4.2mH$

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