TOSHIBA 2SK2679

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

2 S K 2 6 7 9

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

Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.84\Omega$ (Typ.)

High Forward Transfer Admittance : $|Y_{fs}| = 4.4S$ (Typ.)

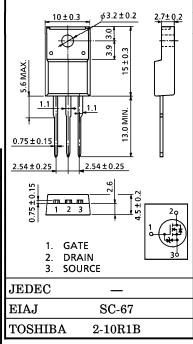
Low Leakage Current : $I_{DSS} = 100 \mu A \text{ (Max.)} \text{ (V}_{DS} = 400 \text{V)}$

Enhancement-Mode : $V_{th} = 2.0 \sim 4.0 \text{V} (V_{DS} = 10 \text{V}, I_D = 1 \text{mA})$

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERIST	SYMBOL	RATING	UNIT	
Drain-Source Voltage	$v_{ m DSS}$	400	V	
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)		$v_{ m DGR}$	400	V
Gate-Source Voltage	v_{GSS}	±30	V	
Drain Current	DC	$I_{\mathbf{D}}$	5.5	Α
	Pulse	I_{DP}	22	A
Drain Power Dissipation	P_{D}	35	W	
Single Pulse Avalanche Energy**		EAS	223	mJ
Avalanche Current	I_{AR}	5.5	A	
Repetitive Avalanche Energy*		E_{AR}	3.5	mJ
Channel Temperature	$\mathrm{T_{ch}}$	150	°C	
Storage Temperature Range		$T_{ m stg}$	-55~150	$^{\circ}\mathrm{C}$

INDUSTRIAL APPLICATIONS Unit in mm



Weight: 1.9g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	R _{th (ch-c)}	3.57	°C/W
Thermal Resistance, Channel to Ambient	R _{th (ch-a)}	62.5	°C/W

- * Repetitive rating; Pulse Width Limited by Max. junction temperature.
- ** V_{DD} =90V, Starting T_{ch} =25°C, L=12mH $R_G = 25\Omega$, $I_{AR} = 5.5A$

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

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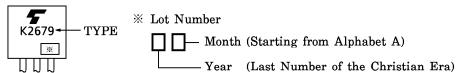
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARAC	TERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage	Current	IGSS	$V_{GS} = \pm 25V, V_{DS} = 0V$	—	_	±10	μ A
Gate-Source B Voltage	reakdown		$I_{G} = \pm 10 \mu A, V_{DS} = 0 V$	±30	_	_	V
Drain Cut-off	Current	$I_{ m DSS}$	$V_{DS}=400V, V_{GS}=0V$	_	_	100	μ A
Drain-Source l Voltage	Breakdown		I _D =10mA, V _{GS} =0V	400	_	_	V
Gate Threshole	d Voltage	$v_{ m th}$	$V_{DS}=10V, I_{D}=1mA$	2.0	_	4.0	V
Drain-Source (ON Resistance	R _{DS} (ON)	$V_{GS}=10V, I_D=3A$	_	0.84	1.2	Ω
Forward Trans Admittance	sfer	Y _{fs}	V_{DS} =10V, I_{D} =3A	2.0	4.4	_	S
Input Capacita	ance	Ciss		<u> </u>	720	_	
Reverse Transfer Capacitance		$\mathrm{C}_{\mathbf{rss}}$	V_{DS} =10V, V_{GS} =0V, f=1MHz		80	_	рF
Output Capacitance		Coss		_	250	_	
Switching Time Fall Time	Rise Time	t _r	V _{GS 0V} I _D =2A V _{out}	_	15	_	
	Turn-on Time	ton	$^{\text{CS}}_{0\text{V}}$	_	30	_	ns
	Fall Time	tf	V _{DD} ≒200V	_	25	_	113
	Turn-off Time	$t_{ m off}$	$V_{\mathrm{IN}}: \mathrm{t_r}, \mathrm{t_f} < 5 \mathrm{ns}$ $\mathrm{Duty} \leq 1\%, \mathrm{t_W} = 10 \mu \mathrm{s}$	_	110	_	
Total Gate Charge (Gate- Source Plus Gate-Drain)		$\mathbf{Q}_{\mathbf{g}}$	V _{DD} ≒320V, V _{GS} =10V,		17	_	nC
Gate-Source Charge		$\mathbf{Q}_{\mathbf{g}\mathbf{s}}$	$I_D = 5.5A$	_	10	_	nc
Gate-Drain ("Miller") Charge		$\mathbf{Q}_{\mathbf{gd}}$		_	7	_	

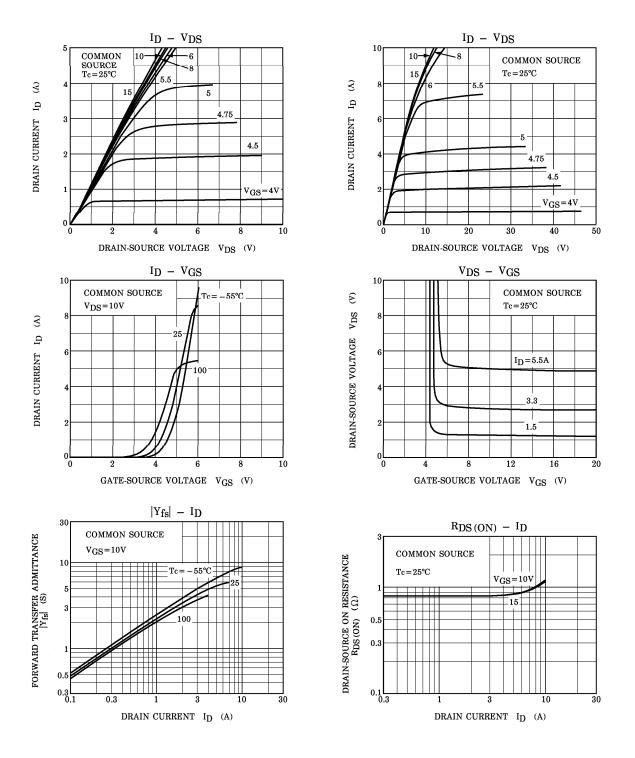
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

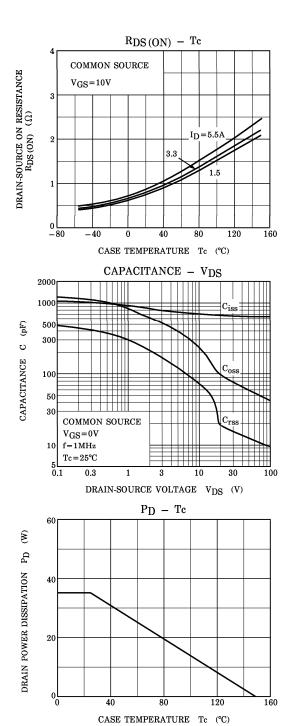
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{ m DR}$	_	_	_	5.5	A
Pulse Drain Reverse Current	$I_{ m DRP}$	_	_	_	22	A
Diode Forward Voltage	$v_{ m DSF}$	I_{DR} =5.5A, V_{GS} =0V	_	_	-1.7	V
Reverse Recovery Time	$\mathfrak{t}_{\mathbf{rr}}$	I_{DR} =5.5A, V_{GS} =0V		350	_	ns
Reverse Recovery Charge	Q_{rr}	$dI_{ m DR}$ / dt = 100A / μs	_	2.1	_	μ C

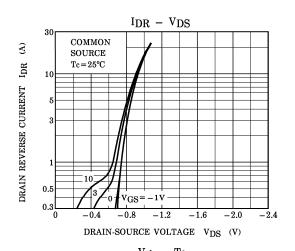
MARKING

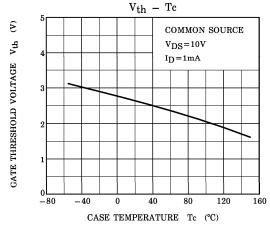


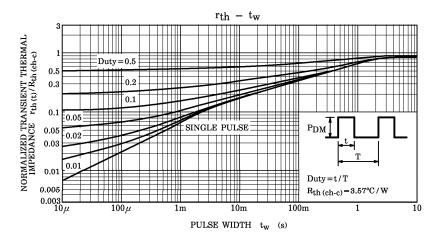
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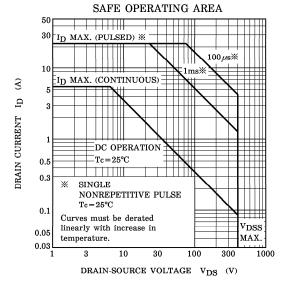


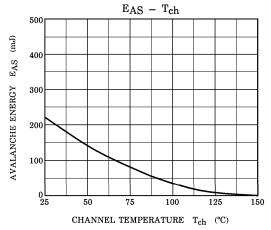


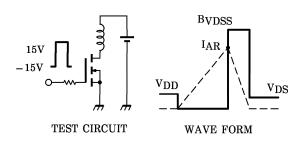












$$\begin{array}{ll} \text{Peak I}_{AR} = \text{5.5A, R}_{G} = 25\Omega \\ \text{V}_{DD} = 90\text{V, L} = 12\text{mH} \end{array} \quad \text{E}_{AS} = \frac{1}{2} \cdot \text{L} \cdot \text{I}^2 \cdot \left(\frac{\text{BVDSS}}{\text{BVDSS} - \text{V}_{DD}} \right)$$