Unit: mm

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π -MOSV)

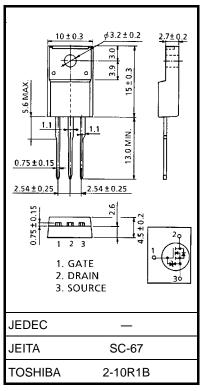
2SK2679

Chopper Regulator, DC–DC Converter and Motor Drive Applications

- Low drain-source ON resistance $RDS(ON) = 0.84 \Omega$ (typ.)
- High forward transfer admittance $: |Y_{fs}| = 4.4 \text{ S (typ.)}$
- Low leakage current $: I_{DSS} = 100 \ \mu A \ (max) \ (V_{DS} = 400 \ V)$
- Enhancementmode : $V_{th} = 2.0 \sim 4.0 V (V_{DS} = 10 V, I_D = 1 mA)$

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Drain-source voltage		V _{DSS}	400	V	
Drain-gate voltage (R	_{GS} = 20 kΩ)	V _{DGR}	400	V	
Gate-source voltage		V _{GSS}	±30	V	
Drain current	DC (Note 1)	۱ _D	5.5	A	
	Pulse (Note 1)	I _{DP}	22	A	
Drain power dissipation	n (Tc = 25°C)	PD	35	W	
Single pulse avalanche	e energy (Note 2)	E _{AS}	223	mJ	
Avalanche current		I _{AR}	5.5	А	
Repetitive avalanche e	nergy (Note 3)	E _{AR}	3.5	mJ	
Channel temperature		T _{ch}	150	°C	
Storage temperature ra	ange	T _{stg}	-55~150	°C	



Weight: 1.9 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Thermal Characteristics

Characteristics	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

Note 1: Ensure that the channel temperature does not exceed 150°C.

Note 2: V_{DD} = 90 V, T_{ch} = 25°C (initial), L = 12 mH, R_G = 25 Ω , I_{AR} = 5.5 A

Note 3: Repetitive rating: pulse width limited by maximum channel temperature

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

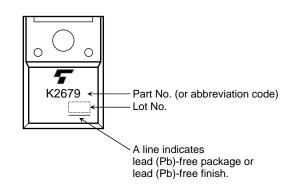
Electrical Characteristics (Ta = 25°C)

Charao	cteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage cu	ırrent	I _{GSS}	$V_{GS} = \pm 25 V, V_{DS} = 0 V$		_	±10	μA
Gate-source bre	eakdown voltage	V (BR) GSS	$I_{G} = \pm 10 \ \mu A, \ V_{DS} = 0 \ V$			_	V
Drain cut-off cu	rrent	I _{DSS}	V _{DS} = 400 V, V _{GS} = 0 V			100	μA
Drain-source br	eakdown voltage	V (BR) DSS	$I_D = 10 \text{ mA}, \text{ V}_{GS} = 0 \text{ V}$	400	_		V
Gate threshold v	/oltage	V _{th}	V _{DS} = 10 V, I _D = 1 mA	2.0		4.0	V
Drain-source O	N resistance	R _{DS (ON)}	V _{GS} = 10 V, I _D = 3 A	—	0.84	1.2	Ω
Forward transfe	r admittance	Y _{fs}	V _{DS} = 10 V, I _D = 3 A	2.0	4.4		S
Input capacitance	e	C _{iss}		—	720		
Reverse transfe	everse transfer capacitance C_{rss} $V_{DS} = 10 V$, $V_{GS} = 0 V$, f = 1 MHz		_	80	_	pF	
Output capacitance		C _{oss}			250		_
Switching time	Rise time	tr	$V_{\rm GS} \stackrel{10V}{}_{\rm 0V} \prod_{\substack{O \\ O \\ IC}} I_{\rm D} \stackrel{I_{\rm D}=2A}{}_{\rm O V_{\rm out}} V_{\rm out}$	_	15	_	
	Turn-on time	t _{on}		_	30	_	
	Fall time	t _f		_	25	_	ns
	Turn-off time	toff	Duty $\leq 1\%$, t _w =10µs	— 110	_		
Total gate charge (gate-source plus gate-drain)		Qg		_	17	_	
Gate-source charge		Q _{gs}	V _{DD} ≈ 320 V, V _{GS} = 10 V, I _D = 5.5 A		10		nC
Gate-drain ("miller") Charge		Q _{gd}			7		

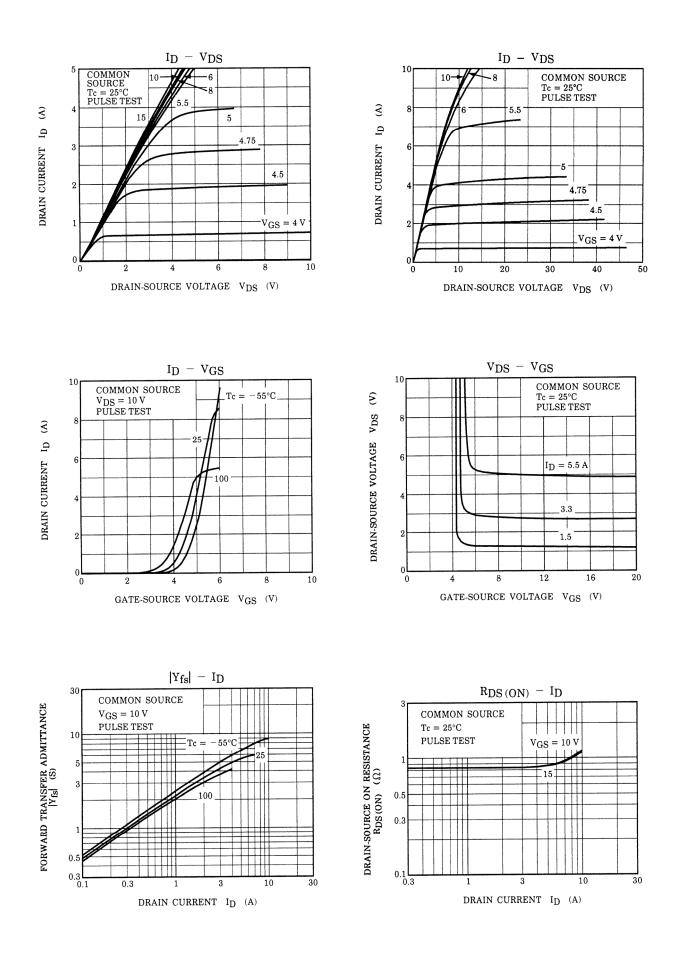
Source–Drain Ratings and Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	—	_	_	5.5	А
Pulse drain reverse current (Note 1)	I _{DRP}	_	_	_	22	А
Forward voltage (diode)	V _{DSF}	I _{DR} = 5.5 A, V _{GS} = 0 V	_	_	-1.7	V
Reverse recovery time	t _{rr}	I _{DR} = 5.5 A, V _{GS} = 0 V		350		ns
Reverse recovery charge	Q _{rr}	dI _{DR} / dt = 100 Å / µs		2.1		μC

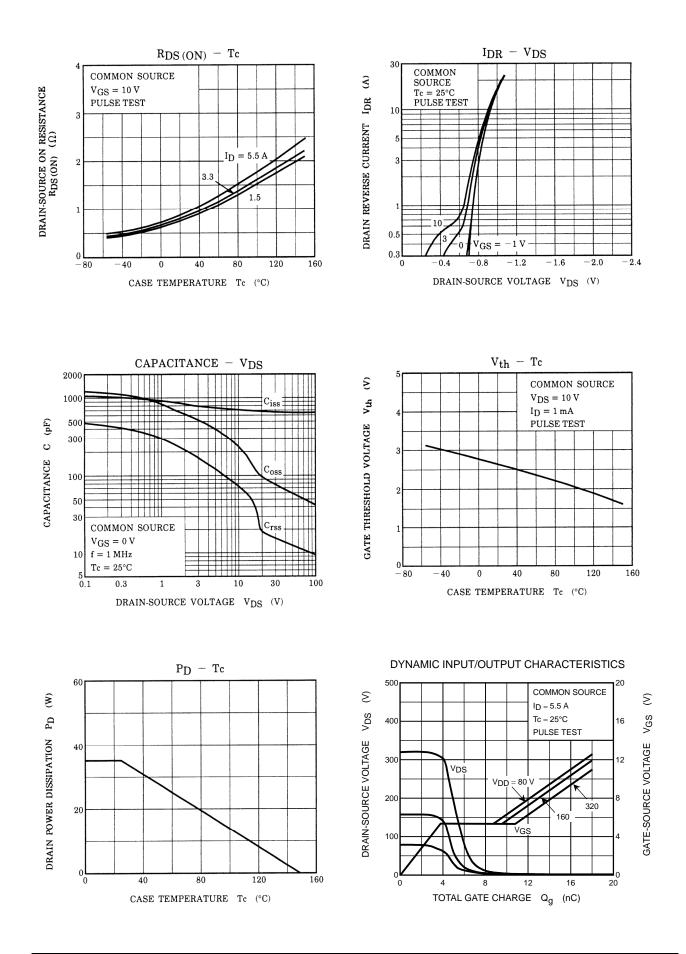
Marking

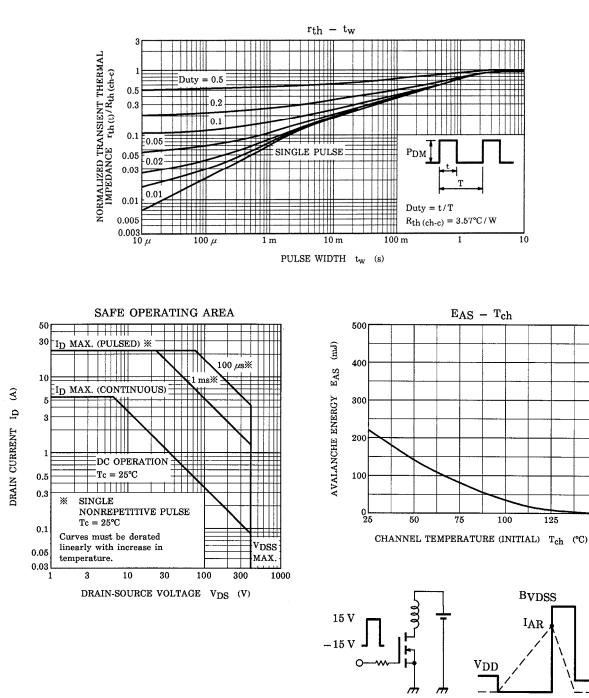


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WAVE FORM



TEST CIRCUIT

150

VDS

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