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

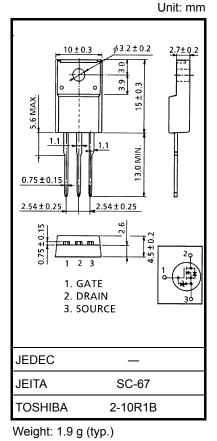
2SK2545

DC–DC Converter, Relay Drive and Motor Drive Applications

- Low drain-source ON resistance $: RDS (ON) = 0.9 \Omega(typ.)$
- High forward transfer admittance $|Y_{fs}| = 5.5 \text{ S (typ.)}$
- Low leakage current $: I_{DSS} = 100 \ \mu A \ (max) \ (V_{DS} = 600 \ V)$
- Enhancement mode : $V_{th} = 2.0 \sim 4.0 \text{ V} (V_{DS} = 10 \text{ V}, \text{ID} = 1 \text{ mA})$

Absolute Maximum Ratings (Ta = 25°C)

Characteris	stics	Symbol	Rating	Unit	
Drain-source voltage		V _{DSS}	600	V	
Drain-gate voltage (R	_{GS} = 20 kΩ)	V _{DGR}	600	V	
Gate-source voltage		V _{GSS}	±30	V	
Drain current	DC (Note 1)	۱ _D	6	А	
	Pulse (Note 1)	I _{DP}	24	А	
Drain power dissipation	n (Tc = 25°C)	PD	40	W	
Single pulse avalanche	e energy (Note 2)	E _{AS}	345	mJ	
Avalanche current		I _{AR}	6	А	
Repetitive avalanche e	nergy (Note 3)	E _{AR}	4	mJ	
Channel temperature		T _{ch}	150	°C	
Storage temperature ra	ange	T _{stg}	-55~150	°C	



 Storage temperature range
 T_{stg}
 −55~150
 °C

 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.

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	Мах	Unit
Thermal resistance, channel to case	R _{th (ch−c)}	3.125	°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 = 16.8 mH, R_G = 25 Ω , I_{AR} = 6 A

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

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

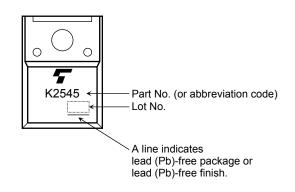
Electrical Characteristics (Ta = 25°C)

Charac	cteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage cu	irrent	I _{GSS}	V_{GS} = ±25 V, V_{DS} = 0 V	_	_	±10	μA
Gate-source bre	eakdown voltage	V (BR) GSS	I_{G} = ±10 µA, V_{GS} = 0 V	±30	_		V
Drain cut-off cu	rrent	I _{DSS}	V _{DS} = 600 V, V _{DS} = 0 V		_	100	μA
Drain-source br	eakdown voltage	V (BR) DSS	I _D = 10 mA, V _{GS} = 0 V	600	_	_	V
Gate threshold v	voltage	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	_	0.9	1.25	Ω
Forward transfe	r admittance	Y _{fs}	V _{DS} = 10 V, I _D = 3 A	2.0	5.5		S
Input capacitance Reverse transfer capacitance		C _{iss}		_	1300		pF
		C _{rss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz		130	_	
Output capacitance		Coss		_	400		
Switching time	Rise time	tr	$V_{GS} \stackrel{10V}{}_{0V} \prod_{\substack{OV\\ UC}} \stackrel{ID=3A}{}_{0V} V_{out}$ $R_{L} = 100\Omega$ $V_{DD} = 300V$ $V_{DD} = 300V$	_	25	_	- ns
	Turn-on time	t _{on}		_	45	_	
	Fall time	t _f		_	40	_	
	Turn-off time	t _{off}		_	150	—	
Total gate charge (Gate-source plus gate-drain)		Qg		_	30	—	
Gate-source charge		Q _{gs}	V _{DD} ≈ 400 V, V _{GS} = 10 V, I _D = 6 A		18	_	nC
Gate-drain ("miller") charge		Q _{gd}			12	_	

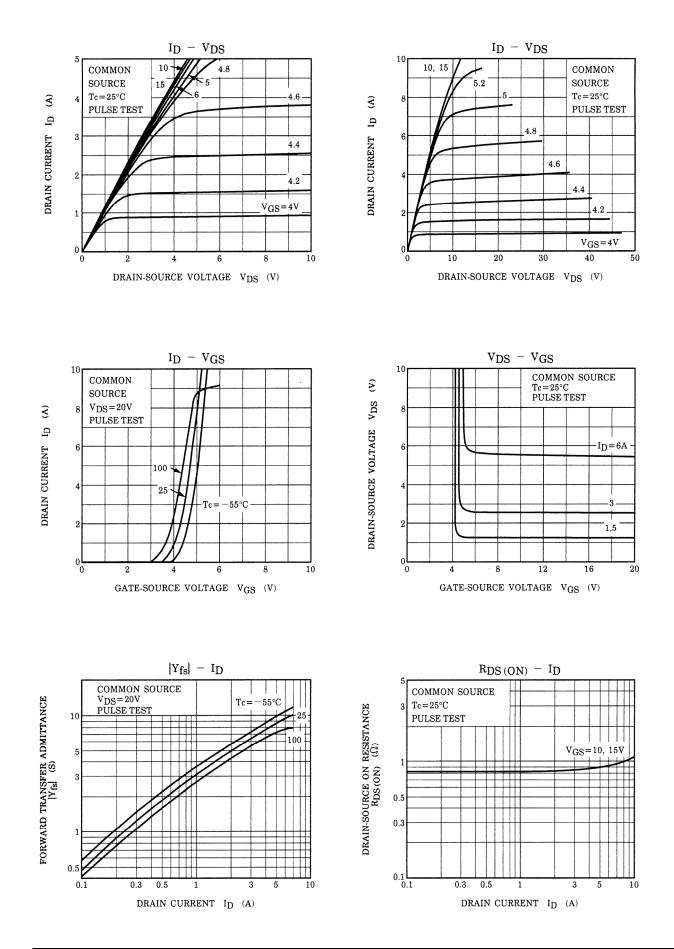
Source–Drain Ratings and Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	—	_	_	6	А
Pulse drain reverse current (Note 1)	I _{DRP}	—	_	_	24	А
Forward voltage (diode)	V _{DSF}	I _{DR} = 6 A, V _{GS} = 0 V	_	_	-1.7	V
Reverse recovery time	t _{rr}	I _{DR} = 6 A, V _{GS} = 0 V, dI _{DR} / dt = 100 A / µs		1000		ns
Reverse recovery charge	Q _{rr}	$1_{DR} = 0.7, v_{GS} = 0.v, u_{DR}/u_{c} = 100.47 \mu_{S}$	_	7.0	_	μC

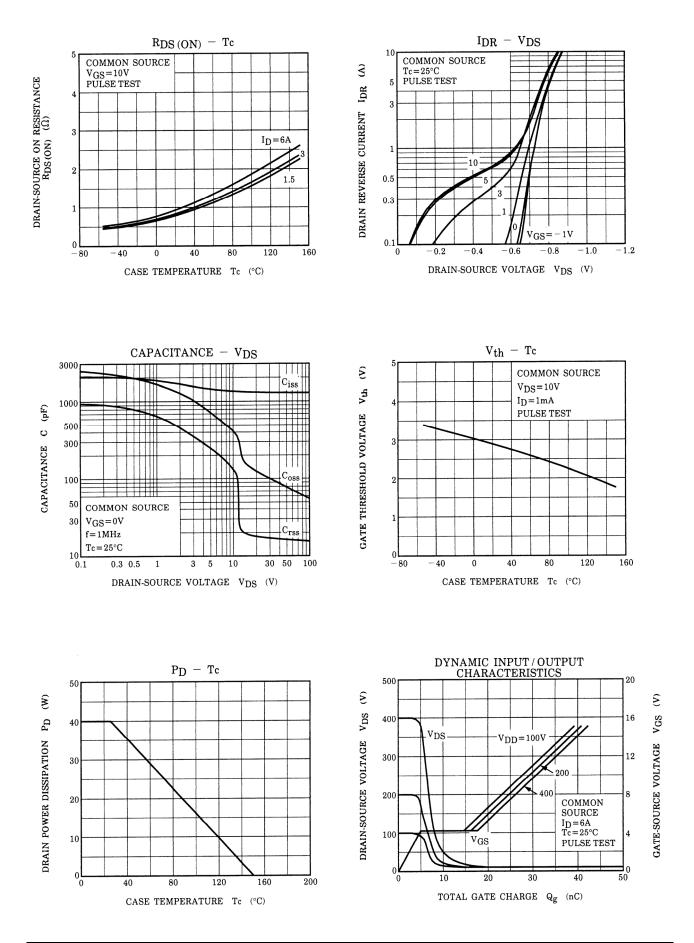
Marking

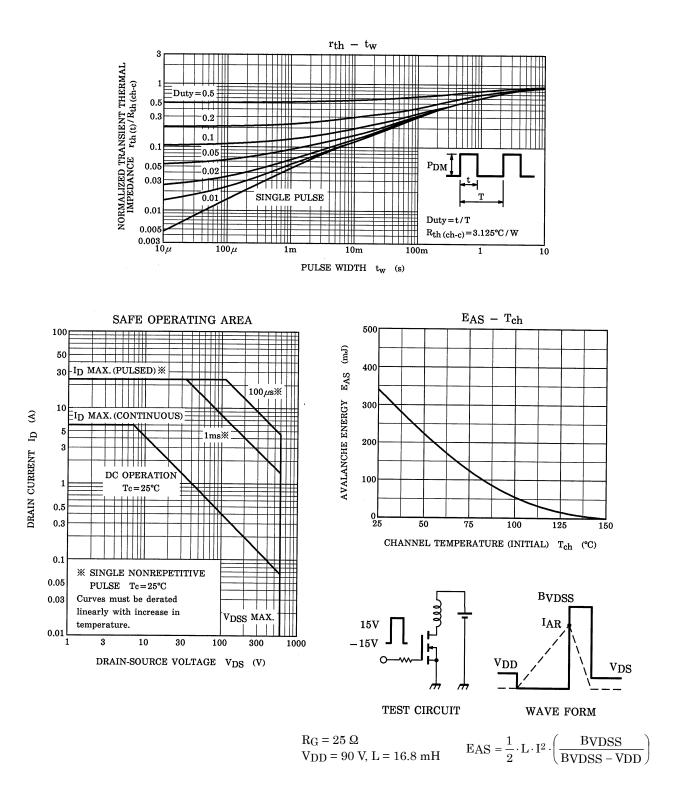


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