TOSHIBA Field Effect Transistor Silicon N Channel MOS Type ($L^2-\pi$ -MOSV)

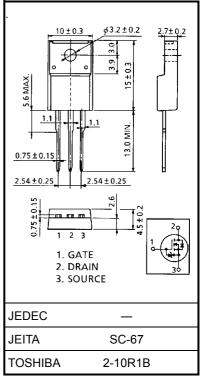
2SK2381

Chopper Regulator, DC–DC Converter and Motor Drive Applications

- Low drain-source ON resistance $: R_{DS}(ON) = 0.56 \Omega$ (typ.)
- High forward transfer admittance $|Y_{fs}| = 4.5 \text{ S (typ.)}$
- Low leakage current $: I_{DSS} = 100 \ \mu A \ (max) \ (V_{DS} = 200 \ V)$
- Enhancement-mode : $V_{th} = 1.5 \sim 3.5 \text{ V} (V_{DS} = 10 \text{ V}, \text{ ID} = 1 \text{ mA})$

Maximum Ratings (Ta = 25°C)

Characteri	stics	Symbol	Rating	Unit	
Drain-source voltage		V _{DSS}	200	V	
Drain-gate voltage (R	_{GS} = 20 kΩ)	V _{DGR}	200	V	
Gate-source voltage		V _{GSS}	±20	V	
Drain current	DC (Note 1)	۱ _D	5	А	
	Pulse (Note 1)	I _{DP}	20	А	
Drain power dissipatio	n (Tc = 25°C)	PD	25	W	
Single pulse avalanche	e energy (Note 2)	E _{AS}	65	mJ	
Avalanche current		I _{AR}	5	А	
Repetitive avalanche e	energy (Note 3)	E _{AR}	2.5	mJ	
Channel temperature		T _{ch}	150	°C	
Storage temperature r	ange	T _{stg}	-55~150	°C	



Weight: 1.9 g (typ.)

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	R _{th (ch−c)}	5.0	°C / W
Thermal resistance, channel to ambient	R _{th (ch−a)}	62.5	°C / W

Note 1: Please use devices on condition that the channel temperature is below 150°C.

Note 2: V_{DD} = 50 V, T_{ch} = 25°C (initial), L = 4.2 mH, R_G = 25 Ω , I_{AR} = 5 A

Note 3: Repetitive rating; Pulse width limited by maximum channel temperature.

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

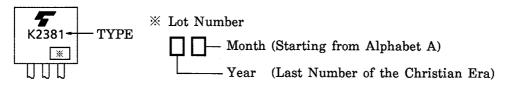
Electrical Characteristics (Ta = 25°C)

Charac	cteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage cu	ırrent	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V	_	_	±10	μA
Drain cut-off cu	rrent	I _{DSS}	V _{DS} = 200 V, V _{GS} = 0 V	_	_	100	μA
Drain-source br	eakdown voltage	V (BR) DSS	I _D = 10 mA, V _{GS} = 0 V	200		_	V
Gate threshold v	voltage	V _{th}	V _{DS} = 10 V, I _D = 1 mA	1.5	_	3.5	V
Drain-source O	N resistance	R _{DS (ON)}	V _{GS} = 10 V, I _D = 2.5 A	_	0.56	0.8	Ω
Forward transfer	r admittance	Y _{fs}	V _{DS} = 10 V, I _D = 2.5 A	2.0	4.5	_	S
Input capacitance	ce	C _{iss}		_	440	_	
Reverse transfer capacitance		C _{rss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz		35	_	pF
Output capacitance		Coss			120	_	
Switching time	Rise time	tr	$v_{GS} \stackrel{10V}{}_{0V} \prod $ $I_D = 2.5A$ V_{OUT} $R_L =$ 40Ω	_	15	_	
	Turn-on time	t _{on}		_	20	_	20
	Fall time	t _f		_	15	_	ns
	Turn-off time	t _{off}	$V_{DD} \rightleftharpoons 100V$ Duty $\leq 1\%$, t _w =10 μ s	_	60	_	
Total gate charge (Gate-source plus gate-drain)		Qg		_	10	_	
Gate-source charge		Q _{gs}	V _{DD} ≈ 100 V, V _{GS} = 10 V, I _D = 5 A		6	—	nC
Gate-drain ("miller") charge		Q _{gd}			4	—	

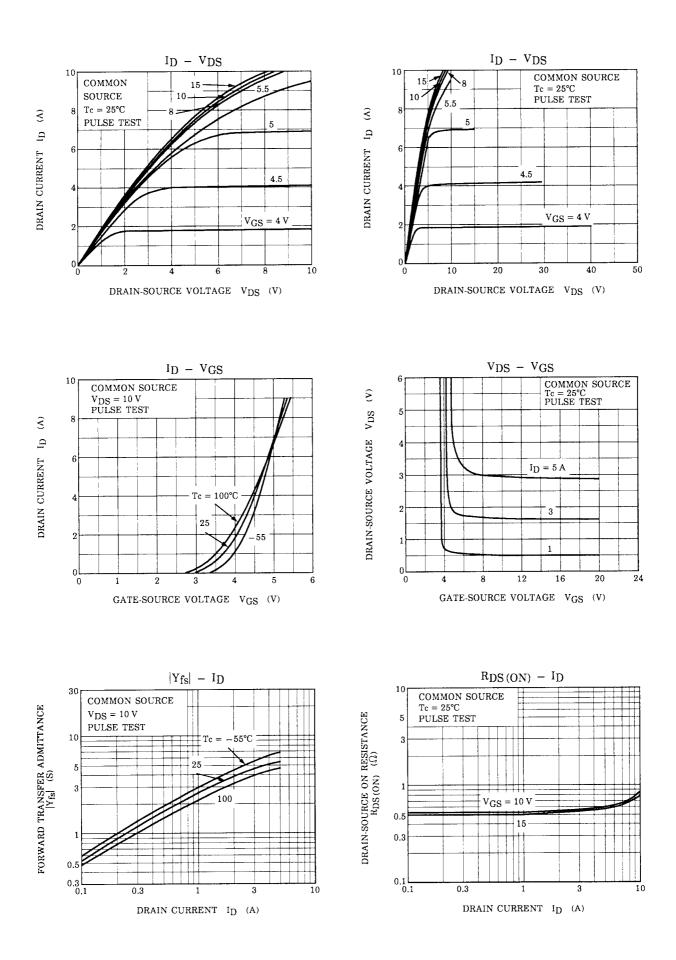
Source–Drain Ratings and Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	_	_	_	5	А
Pulse drain reverse current (Note 1)	I _{DRP}	_	_	_	20	А
Forward voltage (diode)	V _{DSF}	I _{DR} = 5 A, V _{GS} = 0 V	_	-	-2.0	V
Reverse recovery time	t _{rr}	I _{DR} = 5 A, V _{GS} = 0 V	_	150	_	ns
Reverse recovered charge	Q _{rr}	dl _{DR} / dt = 100 A / µs	_	0.45	_	μC

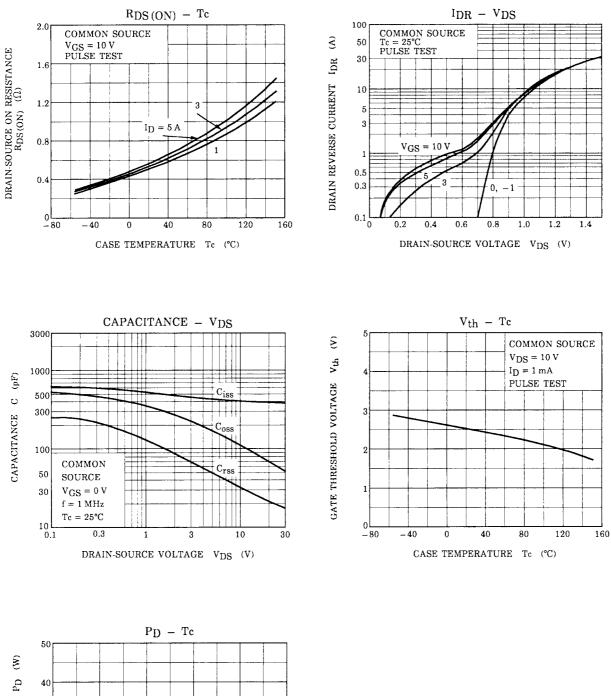
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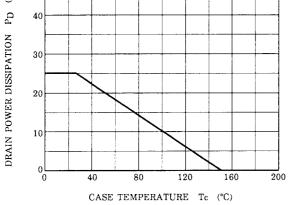


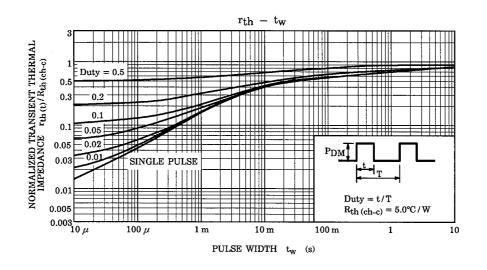
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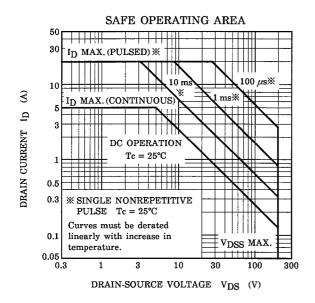


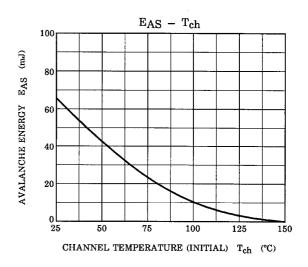
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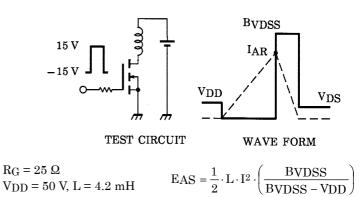












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