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

2SK2998

Chopper Regulator, DC-DC Converter Applications

Unit: mm

•	Low drain-source ON res	istance	: R _{DS} (ON) = 11.5Ω (typ.)
•	High forward transfer add	mittance	$ Y_{fs} = 0.4 \text{ S (typ.)}$
•	Low leakage current	$: I_{DSS} = I$	$100 \mu\text{A} (\text{max}) (\text{V}_{ ext{DS}} = 500 \text{V})$
•	Enhancement mode	$V_{th} = 2.$	$0\sim4.0 \text{ V (V}_{DS} = 10 \text{ V, I}_{D} = 1 \text{ mA)}$

Absolute Maximum Ratings (Ta = 25°C)

Characteris	stics	Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	500	V
Drain-gate voltage (Ro	Drain-gate voltage (R _{GS} = 20 kΩ)		500	V
Gate-source voltage	Gate-source voltage		±30	V
Drain current	DC (Note 1)	ID	0.5	Α
Dialii Cuiteni	Pulse (Note 1)	I _{DP}	1.5	Α
Drain power dissipation	ו	P_{D}	0.9	W
Channel temperature		T _{ch}	150	°C
Storage temperature ra	ange	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. 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).

5.1 max $0.75 \, \text{max}$ 1.0 max 10.5 min 0.8 max 0.6 max 1.27 2.54 1 2 3 1.SOURCE 2.DRAIN 3.GATE **JEDEC** TO-92MOD JEITA TOSHIBA 2-5J1C

Weight: 0.36 g (typ.)

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to ambient	R _{th (ch-a)}	138	°C/W

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

This transistor is an electrostatic-sensitive device.

Please handle with caution.

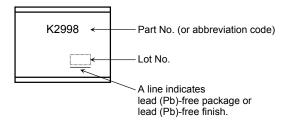
Electrical Characteristics (Ta = 25°C)

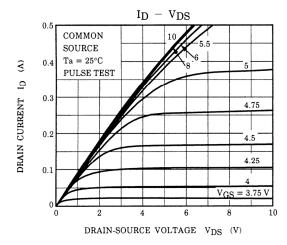
Charac	cteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage current		I _{GSS}	V _{GS} = ±25 V, V _{DS} = 0 V	_	_	±10	μΑ
Gate-source breakdown voltage		V (BR) GSS	I _D = ±10 mA, V _{GS} = 0 V	±30	_	_	V
Drain cut-off cu	rrent	I _{DSS}	V _{DS} = 500 V, V _{GS} = 0 V	1	_	100	μA
Drain-source breakdown voltage		V (BR) DSS	I _D = 10 mA, V _{GS} = 0 V	500	_	_	V
Gate threshold v	oltage/	V _{th}	V _{DS} = 10 V, I _D = 1 mA	2.0	_	4.0	V
Drain-source ON resistance		R _{DS (ON)}	V _{GS} = 10 V, I _D = 0.25 A	_	11.5	18	Ω
Forward transfer admittance		Y _{fs}	V _{DS} = 10 V, I _D = 0.25 A	0.2	0.4		S
Input capacitano	e	C _{iss}		_	75	_	
Reverse transfer capacitance		C _{rss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz	_	7	_	pF
Output capacitance		Coss		_	25	_	
	Rise time	t _r	$V_{GS} \stackrel{10V}{\text{ov}} \prod \stackrel{I_D=0.25\text{A}}{\text{ov}} \text{OUT}$	_	11	_	
Switching time	Turn-on time	t _{on}	$R_{L}=$ $R_{L}=$ $R_{L}=$	_	18	_	ns
Switching time	Fall time t_f $V_{DD} = 250V$	ı	54	ı	115		
	Turn-off time	t _{off}	Duty $\leq 1\%$, $t_{\rm W} = 10 \mu \rm s$		95		
Total gate charge (gate-source plus gate-drain)		Qg	$V_{DD} \approx 400 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.5 \text{ A}$		3.8		
Gate-source charge		Q _{gs}		_	1.9	_	nC
Gate-drain ("miller") charge		Q_{gd}		_	1.9	_	

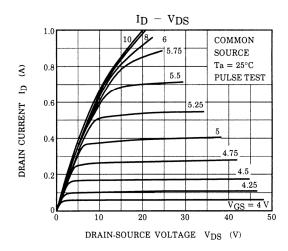
Source-Drain Ratings and Characteristics (Ta = 25°C)

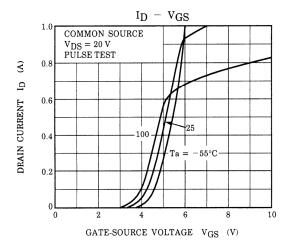
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	_	_	_	0.5	Α
Pulse drain reverse current (Note 1)	I _{DRP}	_	_	_	1.5	Α
Forward voltage (diode)	V _{DSF}	I _{DR} = 0.5 A, V _{GS} = 0 V	_	_	-1.7	V
Reverse recovery time	t _{rr}	I _{DR} = 0.5 A, V _{GS} = 0 V	_	190	_	ns
Reverse recovery charge	Q _{rr}	dl _{DR} / dt = 100 Å / μs	_	380	_	nC

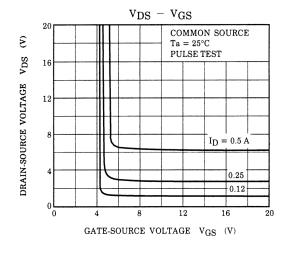
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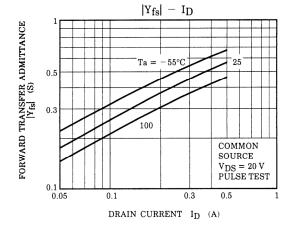


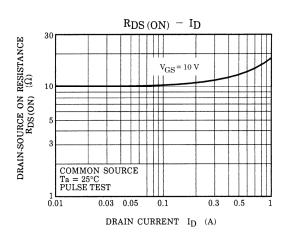




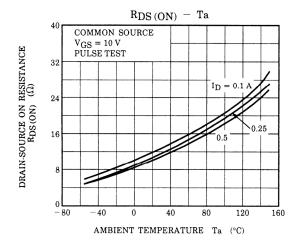


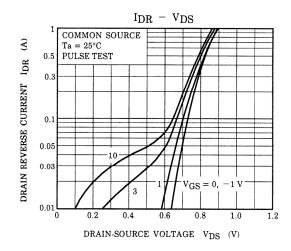


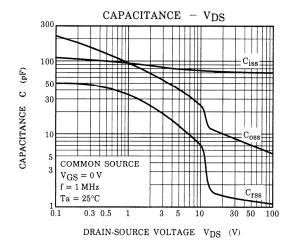


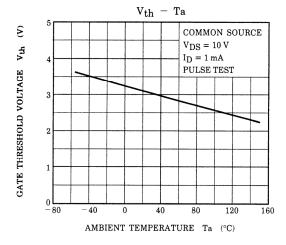


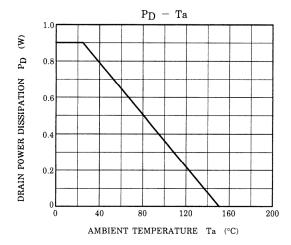
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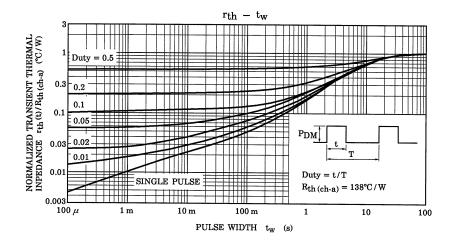


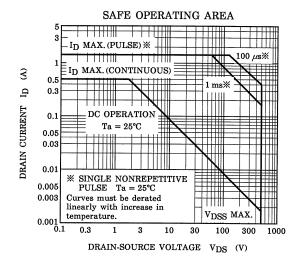






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