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

2SK4115

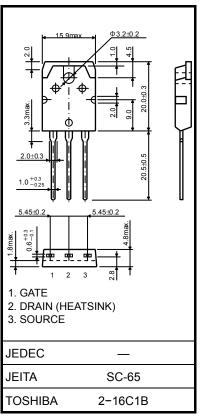
Switching Regulator Applications

Unit: mm

- Low drain-source ON resistance: RDS (ON) = 1.6Ω (typ.)
- High forward transfer admittance: $|Y_{fs}| = 5.0 \text{ S (typ.)}$
- Low leakage current: $I_{DSS} = 100 \mu A (max) (V_{DS} = 720 V)$
- Enhancement model: $V_{th} = 2.0 \sim 4.0 \text{ V (VDS} = 10 \text{ V, ID} = 1 \text{ mA)}$

Absolute Maximum Ratings (Ta = 25°C)

Characte	eristic	Symbol	Rating	Unit	
Drain-source voltage	•	V_{DSS}	900	V	
Drain-gate voltage (F	$R_{GS} = 20 \text{ k}\Omega$	V_{DGR}	900	V	
Gate-source voltage		V _{GSS}	±30	V	
Drain current	DC (Note 1)	ΙD	7	Α	
	Pulse (Note 1)	I _{DP}	21	A	
Drain power dissipat	ion (Tc = 25°C)	P_{D}	150	W	
Single pulse avalance	he energy (Note 2)	E _{AS}	491	mJ	
Avalanche current		I _{AR}	7	Α	
Repetitive avalanche	e energy (Note 3)	E _{AR}	15	mJ	
Channel temperature	9	T _{ch}	150	°C	
Storage temperature	range	T _{stg}	-55~150	°C	

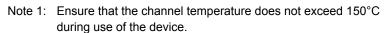


Weight: 4.6 g (typ.)

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

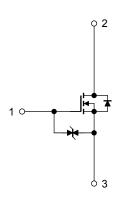
Characteristic	Symbol	Max	Unit
Thermal resistance, channel to case	R _{th (ch-c)}	0.833	°C/W
Thermal resistance, channel to ambient	R _{th (ch-a)}	50	°C/W



Note 2: $V_{DD} = 90 \text{ V}$, $T_{ch} = 25^{\circ}\text{C}$, L = 18.4 mH, $R_G = 25 \Omega$, $I_{AR} = 7 \text{ A}$

Note 3: Repetitive rating: pulse width limited by max junction temperature

This transistor is an electrostatic-sensitive device. Handle with care.





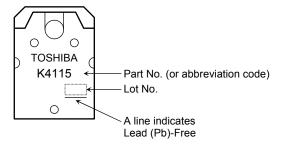
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Char	acteristic	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage current		I _{GSS}	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0 \text{ V}$	_	_	±10	μА
Drain-source breakdown voltage		V (BR) GSS	$I_G = \pm 10 \ \mu A, \ V_{DS} = 0 \ V$	±30	_	_	V
Drain cutoff current		I _{DSS}	V _{DS} = 720 V, V _{GS} = 0 V	_	_	100	μА
Drain-source brea	akdown voltage	V (BR) DSS	$I_D = 10$ mA, $V_{GS} = 0$ V	900	_	_	V
Gate threshold vo	oltage	V _{th}	V _{DS} = 10 V, I _D = 1 mA	2.0	_	4.0	V
Drain-source ON	resistance	R _{DS} (ON)	$V_{GS} = 10 \text{ V}, I_D = 3.5 \text{ A}$	_	1.6	2.0	Ω
Forward transfer	admittance	Y _{fs}	$V_{DS} = 10 \text{ V}, I_D = 3.5 \text{ A}$	3.5	5.0	_	S
Input capacitance Reverse transfer capacitance		C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	_	1650	_	pF
		C _{rss}		_	30	_	
Output capacitance		Coss		_	140	_	
Switching time	Rise time	t _r	$V_{GS} = 3.5 \text{ A} \\ V_{GS} = 0 \text{ V} \\ V_{DD} \approx 400 \text{ V} \\ V_{DD} \approx $	_	50	_	-
	Turn-on time	t _{on}			90		
	Fall time	t _f			70		ns
	Turn-off time	t _{off}		_	240		
Total gate charge (gate-source plus gate-drain)		Qg	$V_{DD} \simeq 400 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 7 \text{ A}$	_	45	_	nC
Gate-source charge		Q _{gs}		_	24	_	
Gate-drain ("Miller") charge		Q _{gd}		_	21		

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

Characteristic	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	_	_	_	7	Α
Pulse drain reverse current (Note 1)	I _{DRP}	_	_	_	21	Α
Forward voltage (diode)	V _{DSF}	I _{DR} = 7 A, V _{GS} = 0 V	_	_	-1.7	V
Reverse recovery time	t _{rr}	$I_{DR} = 7 \text{ A}, V_{GS} = 0 \text{ V},$	_	1400	_	ns
Reverse recovery charge	Q _{rr}	dI _{DR} /dt = 100 A/μs	_	12	_	μС

Marking



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20070701-EN

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