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

2SK3565

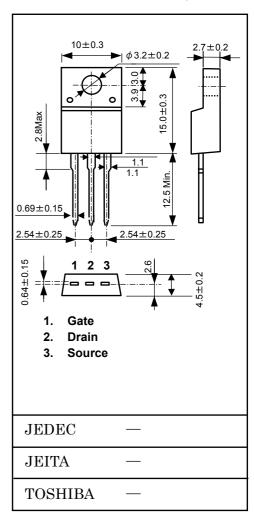
unit: mm

Switching Regulator Applications

- Low drain-source ON resistance: RDS (ON) = 2.0Ω (typ.)
- High forward transfer admittance: $|Y_{fs}| = 4.5 \text{ S (typ.)}$
- Low leakage current: $I_{DSS} = 100 \, \mu \, A \, (V_{DS} = 720 \, V)$
- Enhancement-mode: $V_{th} = 2.0 \sim 4.0 \text{ V}$ ($V_{DS} = 10 \text{ V}$, $I_{D} = 1 \text{ mA}$)

Maximum Ratings (Ta = 25°C)

Characteristics		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)	ID	5	А	
	Pulse (t = 1 ms) (Note 1)	I _{DP}	15		
Drain power dissipati	on (Tc = 25°C)	P _D	45	W	
Single pulse avalanc	he energy (Note 2)	E _{AS}	595	mJ	
Avalanche current		I _{AR}	5	А	
Repetitive avalanche	energy (Note 3)	E _{AR}	4.5	mJ	
Channel temperature	•	T _{ch}	150	°C	
Storage temperature range		T _{stg}	-55~150	°C	



Thermal Characteristics

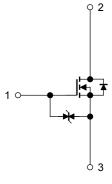
Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	R _{th (ch-c)}	2.78	°C/W
Thermal resistance, channel to ambient	R _{th (ch-a)}	62.5	°C/W

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

Note 2: $V_{DD} = 90 \text{ V}$, $T_{ch} = 25^{\circ}\text{C}$, L = 43.6 mH, $I_{AR} = 5.0 \text{ A}$, $R_G = 25 \Omega$

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

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



TENTATIVE

Electrical Characteristics (Ta = 25°C)

Chara	acteristics	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
Gate-source brea	akdown voltage	V (BR) GSS	$I_G = \pm 10 \mu A, V_{GS} = 0 V$	±30	_	_	V
Drain cut-off curre	ent	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 V, I _D = 3 A	_	2.0	2.5	Ω
Forward transfer	admittance	Y _{fs}	V _{DS} = 20 V, I _D = 3 A	2.0	4.5	_	S
Input capacitance		C _{iss}		_	1150	_	pF
Reverse transfer capacitance		C _{rss}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	_	20	_	
Output capacitance		Coss		_	100	_	
Switching time	Rise time	t _r	V_{GS} V_{GS} $V_{DD} \simeq 200 \text{ V}$	_	30	_	ns
	Turn-on time	t _{on}		_	70	_	
	Fall time	t _f		_	60	_	
	Turn-off time	t _{off}	Duty ≦ 1%, t _W = 10 μs	_	170	_	
Total gate charge		Qg		_	28	_	
Gate-source charge		Qgs	$V_{DD} \simeq 400 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 5 \text{ A}$	_	17	_	nC
Gate-drain charge		Q _{gd}		_	11	_	

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	Α
Pulse drain reverse current (Note 1)	I _{DRP}	_	_	_	15	Α
Forward voltage (diode)	V _{DSF}	I _{DR} = 5 A, V _{GS} = 0 V	_	_	-1.7	V
Reverse recovery time	t _{rr}	$I_{DR} = 5 \text{ A}, V_{GS} = 0 \text{ V},$	_	900	_	ns
Reverse recovery charge	Q _{rr}	dI _{DR} /dt = 100 A/μs	_	5.4	_	μС

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