

2SK2839

Chopper Regulator, DC-DC Converter and Motor Drive Applications

- 4 V gatedrive
- Low drain-source ON resistance : $R_{DS(ON)} = 30 \text{ m}\Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 11 \text{ S}$ (typ.)
- Low leakage current : $I_{DSS} = 100 \text{ }\mu\text{A}$ (max) ($V_{DS} = 30 \text{ V}$)
- Enhancement-mode : $V_{th} = 0.8\sim 2.0 \text{ V}$ ($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$)

Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	30	V
Drain-gate voltage ($R_{GS} = 20 \text{ k}\Omega$)		V_{DGR}	30	V
Gate-source voltage		V_{GSS}	± 20	V
Drain current	DC (Note 1)	I_D	10	A
	Pulse (Note 1)	I_{DP}	40	A
Drain power dissipation (Note 2)		P_D	2.5	W
Single pulse avalanche energy (Note 3)		E_{AS}	282	mJ
Avalanche current		I_{AR}	10	A
Repetitive avalanche energy (Note 4)		E_{AR}	0.25	mJ
Channel temperature		T_{ch}	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55~150	$^\circ\text{C}$

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	50	$^\circ\text{C} / \text{W}$

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

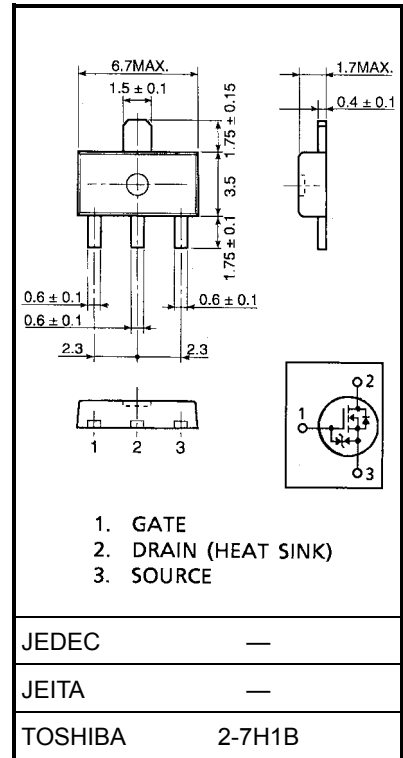
Note 2: Mounted on ceramic substrate ($25.4 \text{ mm} \times 25.4 \text{ mm} \times 0.8 \text{ mm}$)

Note 3: $V_{DD} = 25 \text{ V}$, $T_{ch} = 25^\circ\text{C}$ (initial), $L = 2 \text{ mH}$, $R_G = 25 \text{ }\Omega$, $I_{AR} = 10 \text{ A}$

Note 4: Repetitive rating; Pulse width limited by maximum channel temperature.

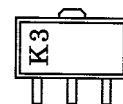
This transistor is an electrostatic sensitive device. Please handle with caution.

Unit: mm



Weight: 0.12 g (typ.)

Marking



Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 16\text{ V}, V_{DS} = 0\text{ V}$	—	—	± 10	μA
Drain cut-off current		I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	—	—	100	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$	30	—	—	V
Gate threshold voltage		V_{th}	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	0.8	—	2.0	V
Drain-source ON resistance		$R_{DS(ON)}$	$V_{DS} = 4\text{ V}, I_D = 5\text{ A}$	—	45	60	m Ω
			$V_{DS} = 10\text{ V}, I_D = 5\text{ A}$	—	30	40	
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 5\text{ A}$	5	11	—	S
Input capacitance		C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	700	—	pF
Reverse transfer capacitance		C_{rss}		—	150	—	
Output capacitance		C_{oss}		—	360	—	
Switching time	Rise time	t_r	<p>$I_D = 5\text{ A}$ $R_L = 3\ \Omega$ $V_{DD} \approx 15\text{ V}$ Duty $\leq 1\%$, $t_w = 10\ \mu\text{s}$</p>	—	20	—	ns
	Turn-on time	t_{on}		—	25	—	
	Fall time	t_f		—	100	—	
	Turn-off time	t_{off}		—	300	—	
Total gate charge (gate-source plus gate-drain)		Q_g	$V_{DD} \approx 24\text{ V}, V_{GS} = 10\text{ V}, I_D = 10\text{ A}$	—	26	—	nC
Gate-source charge		Q_{gs}		—	20	—	
Gate-drain ("miller") Charge		Q_{gd}		—	6	—	

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	10	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	40	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 10\text{ A}, V_{GS} = 0\text{ V}$	—	—	-2.0	V
Reverse recovery time	t_{rr}	$I_{DR} = 10\text{ A}, V_{GS} = 0\text{ V}, dI_{DR} / dt = 50\text{ A} / \mu\text{s}$	—	120	—	ns
Reverse recovery charge	Q_{rr}		—	140	—	nC

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