

THUNDER Field Effect Transistor Silicon N Channel MOS Type (π -MOSV)

2SK3132

Chopper Regulator DC–DC Converter, and Motor Drive Applications

- Low drain-source ON resistance $: R_{DS}(ON) = 0.07 \Omega$ (typ.)
- High forward transfer admittance $: |Y_{fs}| = 33 \text{ S (typ.)}$
- Low leakage current $: I_{DSS} = 100 \ \mu A \ (max) \ (V_{DS} = 500 \ V)$
- Enhancement-mode $: V_{th} = 2.4 \sim 3.4 \text{ V} (V_{DS} = 10 \text{ V}, \text{ I}_{D} = 1 \text{ mA})$

Maximum Ratings (Ta = 25°C)

Characteris	stics	Symbol	Rating	Unit
Drain-source voltage		V _{DSS}	500	V
Drain-gate voltage (R	_{GS} = 20 kΩ)	V _{DGR}	500	V
Gate-source voltage		V _{GSS}	±30	V
DCDrain current	DC (Note 1)	۱ _D	50	А
	Pulse (Note 1)	I _{DP}	200	А
Drain power dissipation	n (Tc = 25°C)	PD	250	W
Single pulse avalanche	e energy (Note 2)	E _{AS}	525	mJ
Avalanche current		I _{AR}	50	А
Repetitive avalanche e	nergy (Note 3)	E _{AR}	25	mJ
Channel temperature		T _{ch}	150	°C
Storage temperature ra	ange	T _{stg}	-55~150	°C



Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	R _{th (ch−c)}	0.5	°C / W
Thermal resistance, channel to ambient	R _{th (ch−a)}	35.7	°C / W

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

Note 2: V_{DD} = 90 V, T_{ch} = 25°C (initial), L = 357 µH, R_G = 25 Ω , I_{AR} = 50 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	teristics	Symbol	Test Condition		Тур.	Max	Unit
Gate leakage cu	rrent	I _{GSS}	V_{GS} = ±25 V, V_{DS} = 0 V		—	±10	μA
Gate-source bre	eakdown voltage	V (BR) GSS	I_{G} = ±10 µA, V _{DS} = 0 V				V
Drain cut-off cu	rrent	I _{DSS}	V _{DS} = 500 V, V _{GS} = 0 V	_	—	100	μA
Drain-source br	eakdown voltage	V (BR) DSS	I _D = 10 mA, V _{GS} = 0 V				V
Gate threshold v	voltage	V _{th}	V _{DS} = 10 V, I _D = 1 mA	2.4	_	3.4	V
Drain-source Ol	N resistance	R _{DS (ON)}	V _{GS} = 10 V, I _D = 25 A		0.07	0.095	Ω
Forward transfer	admittance	Y _{fs}	V _{DS} = 10 V, I _D = 25 A	15	33		S
Input capacitanc	e	C _{iss}		_	11000	_	
Reverse transfer	r capacitance	C _{rss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz	_	2100	_	pF
Output capacitar	nce	C _{oss}		_	4200	_	
Switching time	Rise time	tr	$V_{GS} \xrightarrow{10V}_{0V} \xrightarrow{I_D = 25A}_{OV OUT}$		105		
	Turn-on time	t _{on}			160		- ns
	Fall time	t _f			65		
	Turn-off time	t _{off}	Duty $\leq 1\%$, t _w =10µs	_	245	-	
Total gate charge (Gate-source plus gate-drain)		Qg		_	280	_	
Gate-source charge		Q _{gs}	V _{DD} ≈ 400 V, V _{GS} = 10 V, I _D = 50 A	_	150	—	nC
Gate-drain ("miller") charge		Q _{gd}		-	130	-	

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

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	—	_	_	50	А
Pulse drain reverse current (Note 1)	I _{DRP}	_		_	200	A
Forward voltage (diode)	V _{DSF}	I _{DR} = 25 A, V _{GS} = 0 V	_	_	-1.7	V
Reverse recovery time	t _{rr}	I _{DR} = 50 A, V _{GS} = 0 V	_	600	_	ns
Reverse recovery charge	Q _{rr}	dI _{DR} / dt = 100 A / μs		12	—	μC















Package Information

TO-3PL PACKAGE



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Cumber 1	单位 mm				
Symbol	Min	Nom	Max		
A	4.80	5.00	5.20		
A1	1.80	2.00	2.20		
A2	3.20	3.40	3.60		
b	0.80	1.00	1.20		
b1	2.90	3.10	3.30		
b2	2.40	2.60	2.80		
с	0.50	0.60	0.70		
e	5.25	5.45	5.65		
Е	19.8	20.0	20.2		
E1	17.8	18.0	18.2		
E2	7.80	8.00	8.20		
Н	25.8	26.0	26.2		
H1	19.8	20.0	20.2		
H2	19.8	20.3	20.8		
H3	2.00	2.50	3.00		
G	5.80	6.00	6.20		
ΦP	3.00	3.20	3.40		
J	4.80	5.00	5.20		
K	1.30	1,50	1,70		

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