



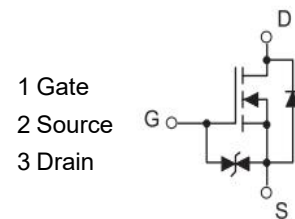
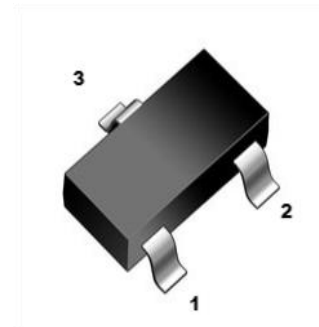
1. Features

- Low $R_{ds(on)}$ @ $V_{GS} = 10V$
- HMB ESD Protection 2KV
- Halogen-free、RoHS Compliant
- Surface Mount Package

2. Mechanical Data

- Case: Molded Plastic, SOT-23 .
- Epoxy: UL 94V-0 rate flame retardant
- Terminals: Plated Leads Solderable per MIL-STD-750, Method-2026.
- Marking: R16
- Mounting Position : Any.

SOT-23



3. Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	7	A
Pulsed Drain Current ¹	I_{DM}	40	A
Power Dissipation	P_D	1.1	W
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	125	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-50~ +150	°C

**4. Electrical Characteristics**

Rating at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V, V _{GS} = 0V			1	μA
Gate-source leakage current	I _{GSS}	V _{GS} =±10V, V _{DS} = 0V			±10	μA
On characteristics ³						
Drain-source on-resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =7A		13	18	mΩ
		V _{GS} =2.5V, I _D =4A		17	22	mΩ
		V _{GS} =1.8V, I _D =1.5A		27	39	mΩ
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.6	1	V
Dynamic Characteristics ⁴						
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f =1MHz		610		pF
Output capacitance	C _{oss}			130		pF
Reverse transfer capacitance	C _{rss}			110		pF
Switching Characteristics ⁴						
Turn-on delay time	t _{d(on)}	V _{DD} =10V, V _{GS} =10V, I _D =7A, R _G =2.2Ω		4		ns
Turn-on rise time	t _r			15		ns
Turn-off delay time	t _{d(off)}			18		ns
Turn-off fall time	t _f			8		ns
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =10V, I _D =7A		12		nC
Gate-Source Charge	Q _{gs}			2		nC
Gate-Drain Charge	Q _{gd}			2.5		nC
Source-drain diode characteristics and maximum ratings ³						
Diode forward voltage	V _{SD}	I _S =5A, V _{GS} =0V			1.2	V

Note :

1. Repetitive rating: Pluse width limited by maximum junction temperature
2. Surface Mounted on FR4 board, $t \leq 10$ sec.
3. Pulse test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.



5. Rating And Characteristic Curves

Fig1: Output Characteristics

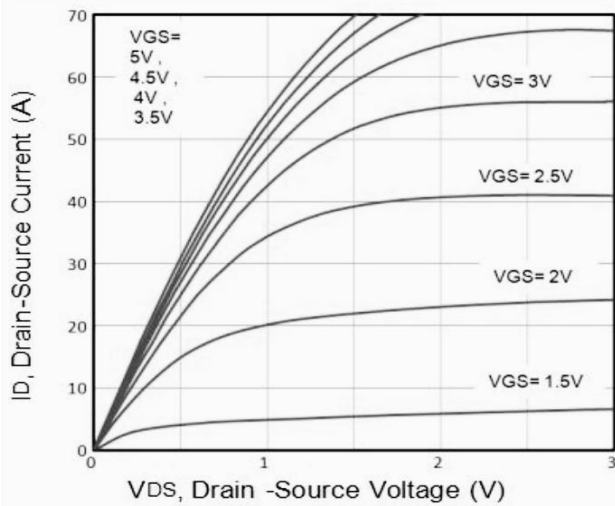


Fig2: Transfer Characteristics

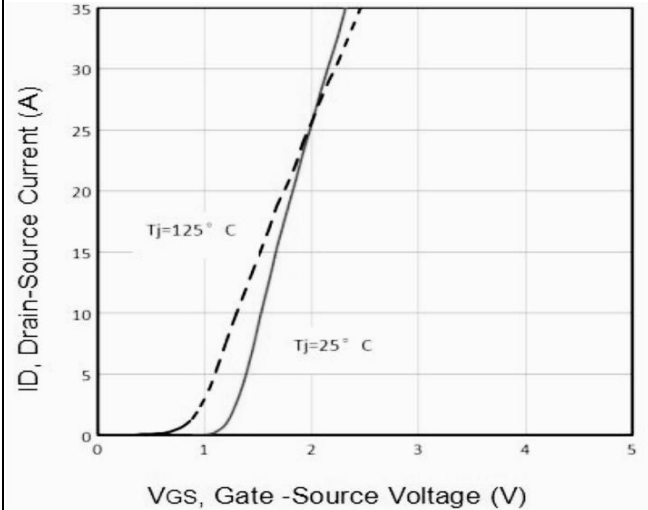


Fig.3 $R_{DS(on)}$ - I_D

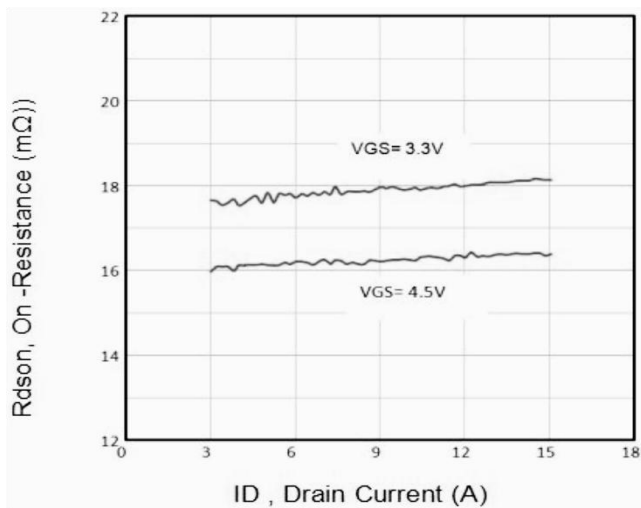


Fig.4 I_D - V_{DS}

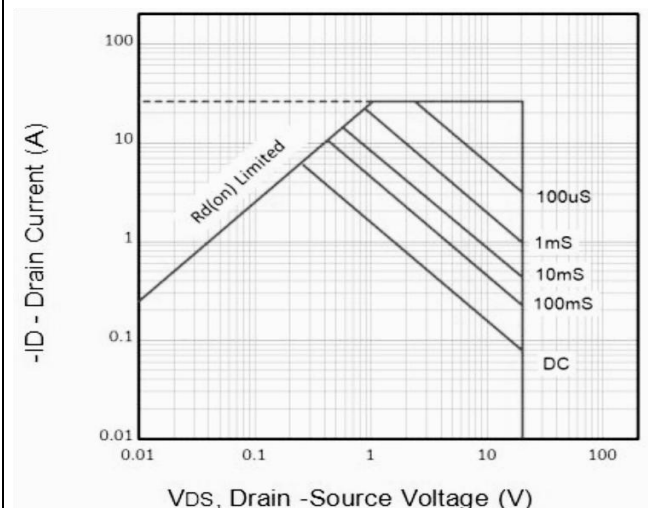


Fig.5 I_S - V_{SD}

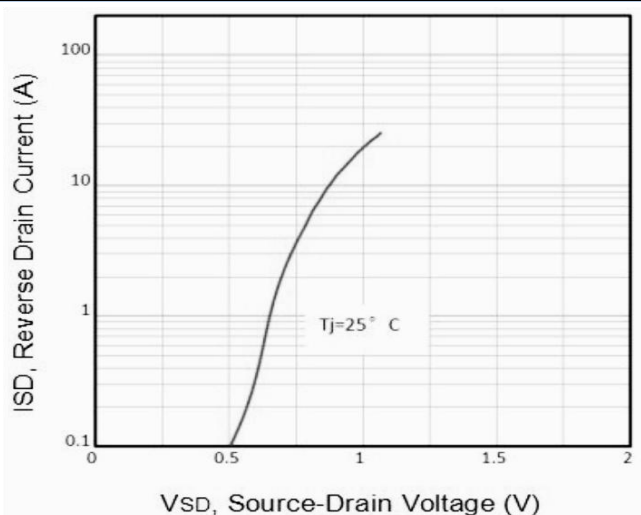
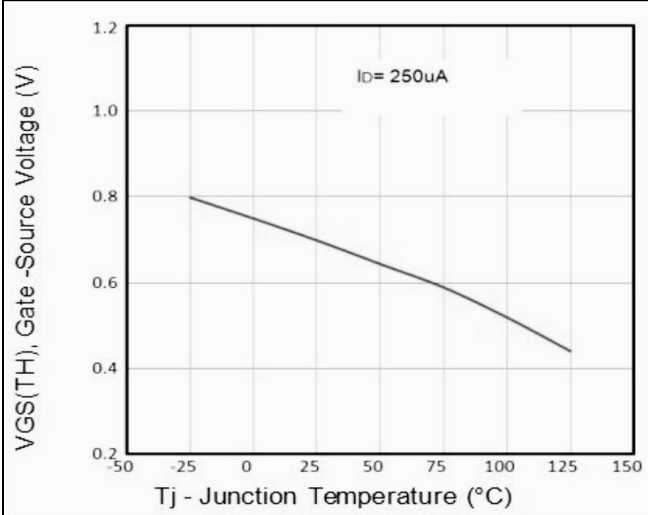
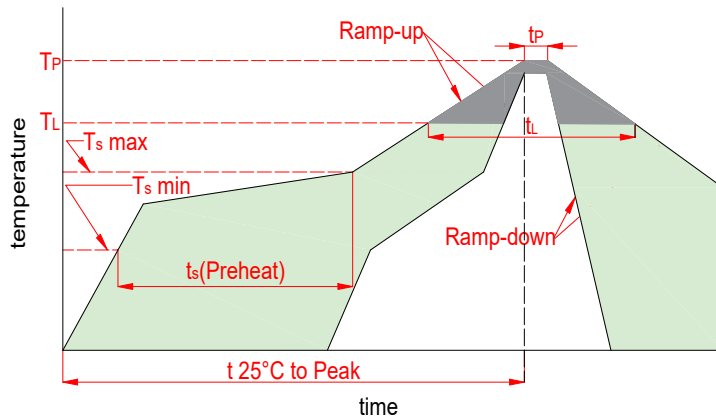


Fig.6 Threshold Voltage



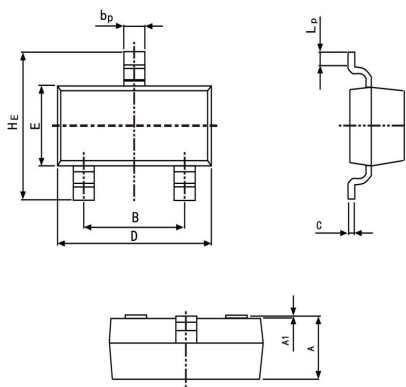


6. Soldering Parameters

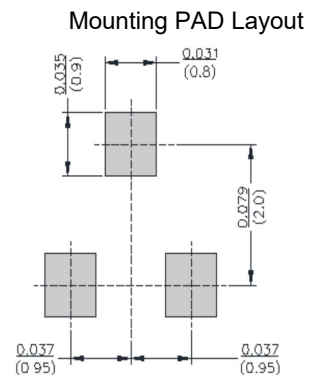


Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150°C
	Temp. max(T_s (min))	200°C
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3°C/s max
T_s (max) to T_L -Ramp-up Rate		3°C/s max
Reflow	Temp. (T_L)(Liquidus)	217°C
	Temp. (t_L)(Liquidus)	60~150s
Peak Temp. (T_P)		260 ^{+0/-5} °C
Time within actual peak Temp. (t_p)		30s max
Ramp-down Rate		6°C/s max
Time 25°C to peak Tempe. (T_P)		8 minutes max
Do not exceed		260°C

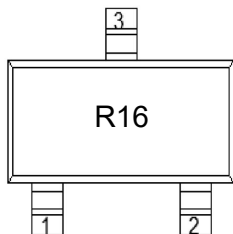
7. Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50



8. Part Marking System



9. Package Information

Package	Part Number	Tape Width(mm)	Quantity(pcs)
SOT-23	2SK3416	8	3000



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