

FEATURES

- | High Current Capability

- | Low Forward Voltage Drop

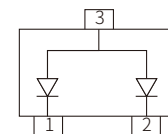
- | Extremely Fast Switching Speed



SOT-23



Marking



Schematic Symbol

MECHANICAL DATA

- | SOT-23 Small Outline Plastic Package

- | Epoxy UL: 94V-0

- | Mounting Position: Any

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	30	V
Maximum RMS Voltage	V_{RMS}	21	V
Maximum DC Blocking Voltage	V_{DC}	30	V
Maximum Average Forward Rectified Current	I_{FM}	200	mA
Peak Forward Surge Current 8.3ms Single Half Sine-wave	I_{FSM}	600	mA
Typical Thermal Resistance	$R_{\theta JA}$	500	$^{\circ}\text{C}/\text{W}$
Power Dissipation	P_D	200	mW
Junction Temperature	T_J	125	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-50~+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 0.1\text{mA}$			0.24	V
		$I_F = 1.0\text{mA}$			0.32	V
		$I_F = 10\text{mA}$			0.40	V
		$I_F = 30\text{mA}$			0.50	V
		$I_F = 100\text{mA}$			1.00	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_R = 100\mu\text{A}$	30			V
Reverse Leakage Current	I_R	$V_R = 25\text{V}$			2	μA
Type Junction Capacitance	C_j	$V_R = 1\text{V}, f = 1\text{MHz}$			10	pF
Reverse Recovery Time	T_{RR}	$I_F = I_R = 10\text{mA}, R_L = 100\Omega$ $I_{RR} = 0.1 \times I_R$			5	nS

CHARACTERISTIC CURVES

Fig.1 Forward Characteristics

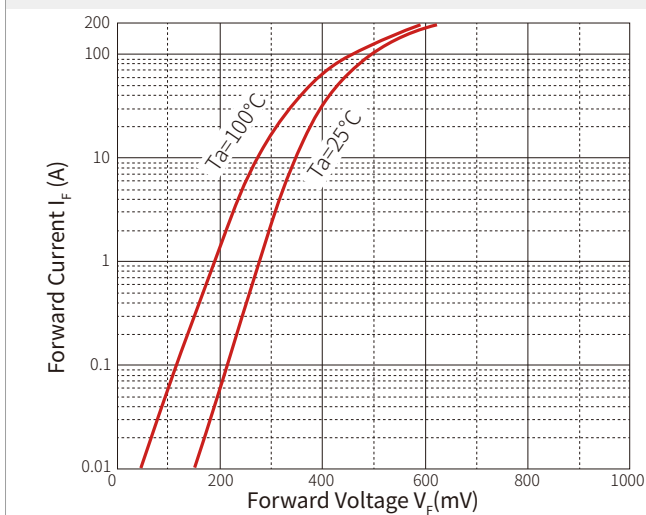


Fig.2 Reverse Characteristics

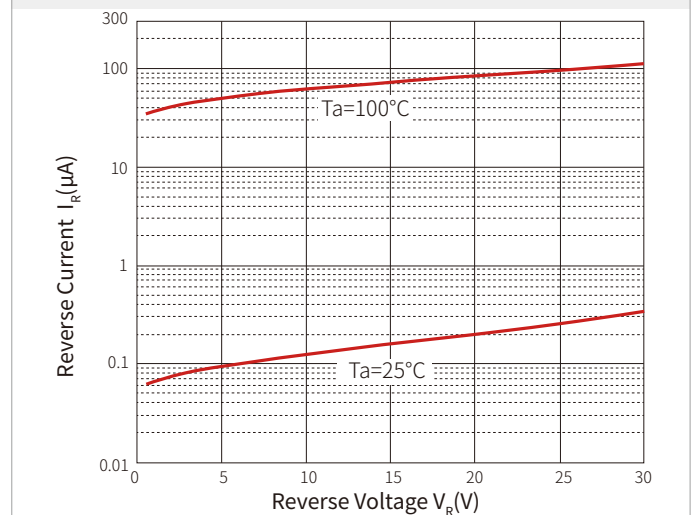
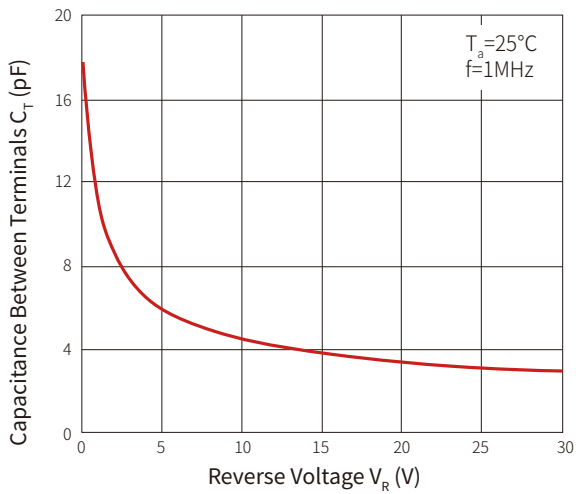
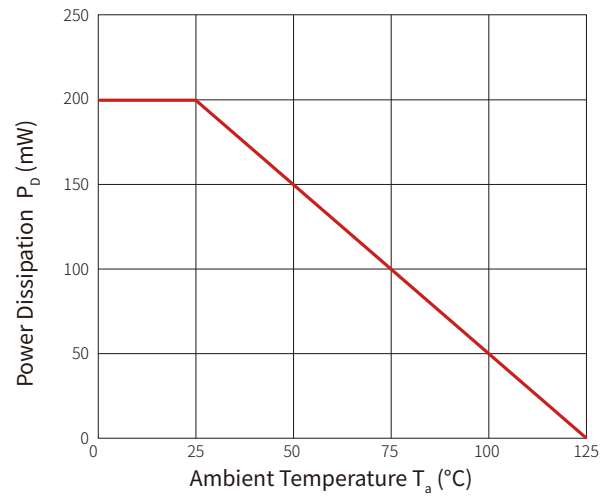
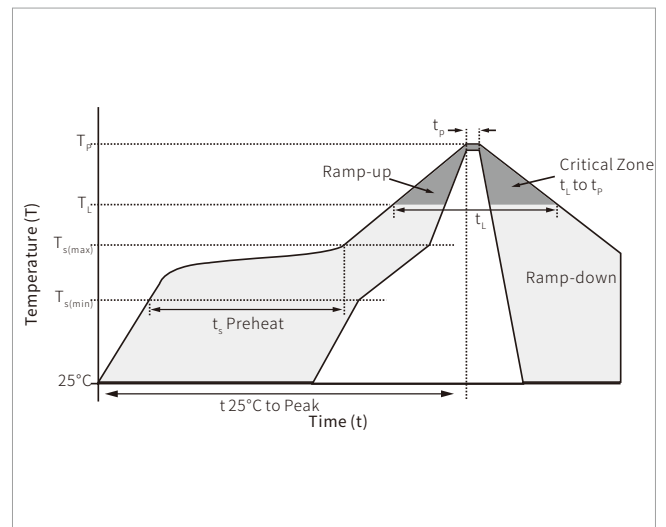


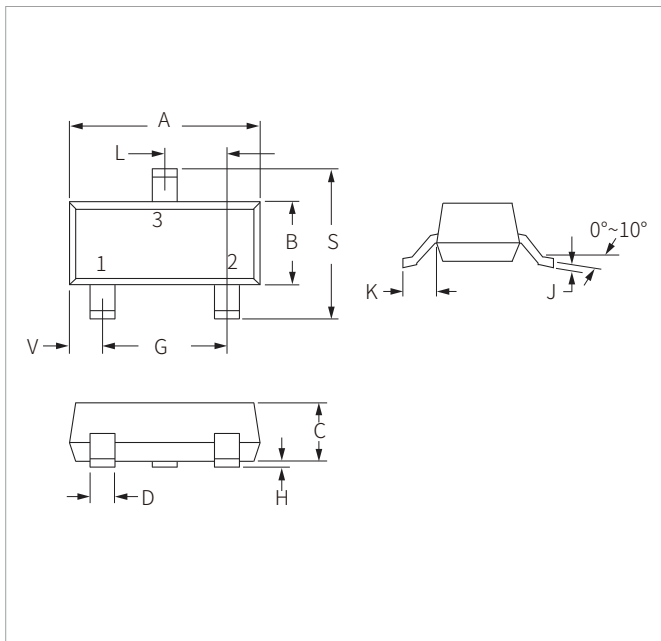
Fig.3 Capacitance Characteristics

Fig.4 Power Derating Curve


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(\text{min})}$)	150 $^\circ\text{C}$
	Temperature Max ($T_{s(\text{max})}$)	200 $^\circ\text{C}$
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3 $^\circ\text{C}/\text{second}$ max
$T_{s(\text{max})}$ to T_L - Ramp-up Rate		3 $^\circ\text{C}/\text{second}$ max
Reflow	Temperature (T_L) (Liquidus)	217 $^\circ\text{C}$
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 $^\circ\text{C}$
Time within 5 $^\circ\text{C}$ of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6 $^\circ\text{C}/\text{second}$ max
Time 25 $^\circ\text{C}$ to peak Temperature (T_p)		8 minutes max.
Do not exceed		260 $^\circ\text{C}$

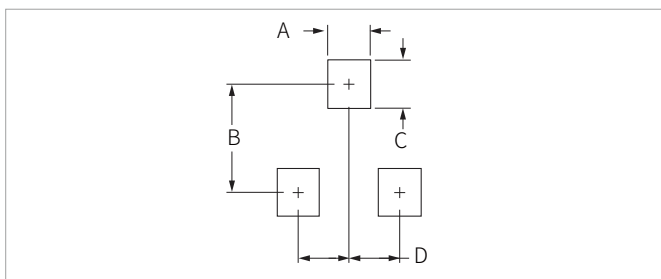


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
BAT54A	SOT-23	3000PCS	7"

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