

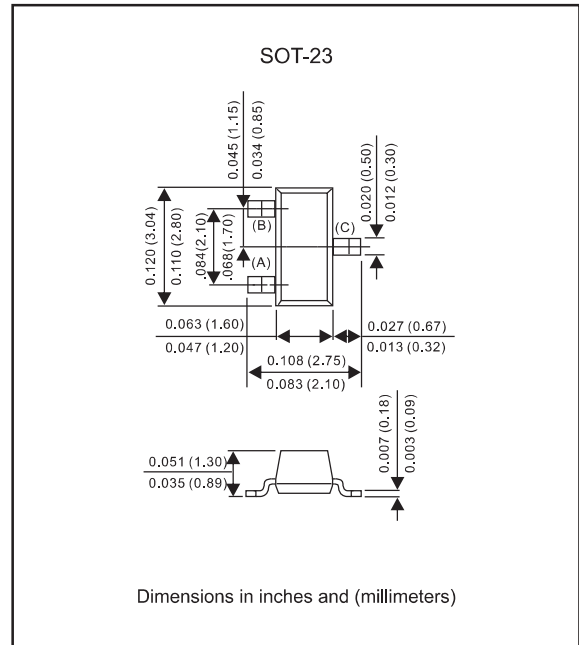
Features

- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Silicon epitaxial planar chip.
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Package outline



Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	BAL99-Q1	BAV99-Q1	BAW56-Q1	BAV70-Q1	UNIT
Reverse Voltage	V_R	70				V
Forward Current	I_F	100	215	200		mA
Peak Forward Surge Current	I_{FM}	500				mA
Non-Repetitive Peak Forward Surge Current @ t=1.0us @ t=1.0s	I_{FSM}	2.0 1.0				A

Thermal Characteristics

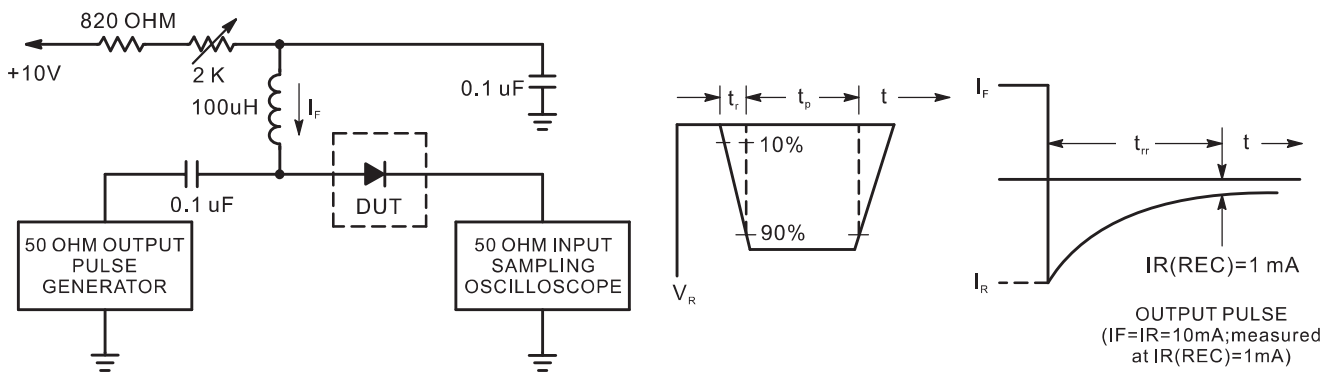
PARAMETER	SYMBOL	MAX.	UNIT
Total Device Dissipation FR-5 Board* ¹ , $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate* ² , $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Operating Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 ~ +150	$^\circ\text{C}$

1. FR-5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

Electrical Characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Reverse Breakdown Voltage($I_{BR}=100\mu\text{A}$)	V_{BR}	70		V
Reverse Voltage Leakage Current (at $V_R = 70\text{V}$, $T_J = 25^\circ\text{C}$) BAL99-Q1/BAV99-Q1/BAW56-Q1/BAV70-Q1 (at $V_R = 25\text{V}$, $T_J = 150^\circ\text{C}$)BAL99-Q1/BAV99-Q1/BAW56-Q1 (at $V_R = 25\text{V}$, $T_J = 150^\circ\text{C}$)BAV70-Q1 (at $V_R = 70\text{V}$, $T_J = 150^\circ\text{C}$)BAL99-Q1/BAV99-Q1/BAW56-Q1 (at $V_R = 70\text{V}$, $T_J = 150^\circ\text{C}$)BAV70-Q1	I_R		2.5 30 60 50 100	μA
Diode Capacitance($V_R = 0\text{V}$, $f = 1.0\text{MHz}$) BAL99-Q1/BAV99-Q1/BAV70-Q1 BAW56-Q1	C_D		1.5 2.0	pF
Reverse Recovery Time($I_F = I_R = 10\text{mA}$, $V_R = 5.0\text{Vdc}$, $I_{R(REC)} = 1.0\text{mA}$, $R_L = 100_{\Omega}$)	t_{rr}		6.0	ns
Forward Voltage (at $I_F = 1.0\text{mA}$) (at $I_F = 10\text{mA}$) (at $I_F = 50\text{mA}$) (at $I_F = 150\text{mA}$)	V_F		715 855 1000 1250	mV

Recovery Time Equivalent Test Circuit



- Notes :
1. A2.0 Kohm variable resistor adjusted for a forward Current (I_F) of 10mA.
 2. Input pulse is adjusted so $I_R(\text{peak})$ is equal to 10 mA.
 3. $t_p \gg t_{rr}$.

Rating and characteristic curves for each diode

FIG.1-TYPICAL FORWARD CHARACTERISTICS

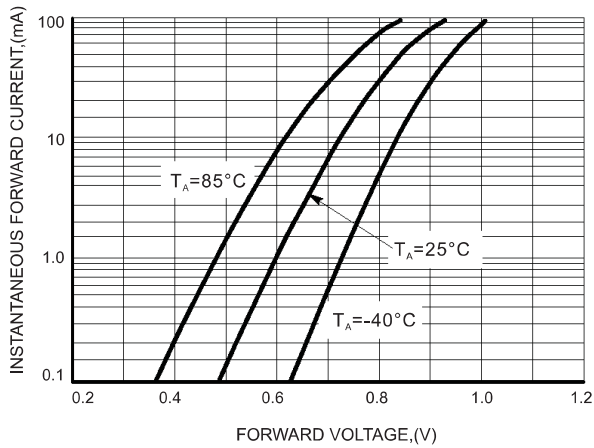


FIG.2 - TYPICAL REVERSE CHARACTERISTICS

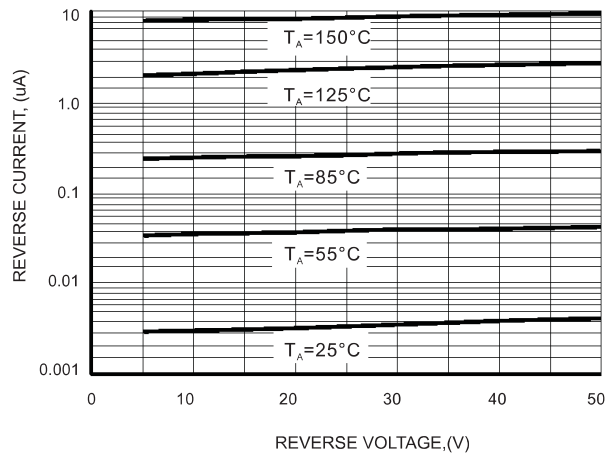


FIG.3a - TYPICAL DIODE CAPACITANCE BAL99-Q1/BAV99-Q1/BAV70-Q1

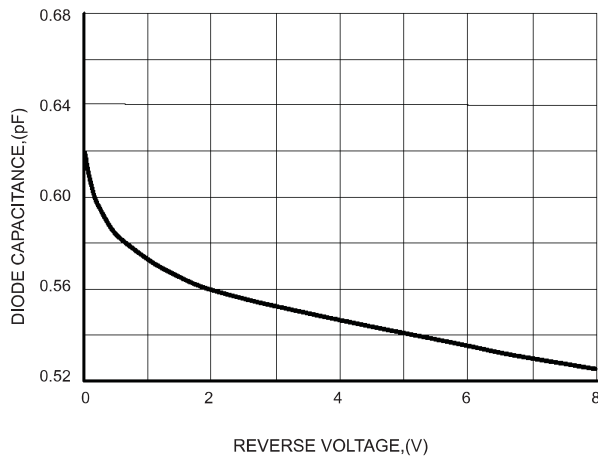
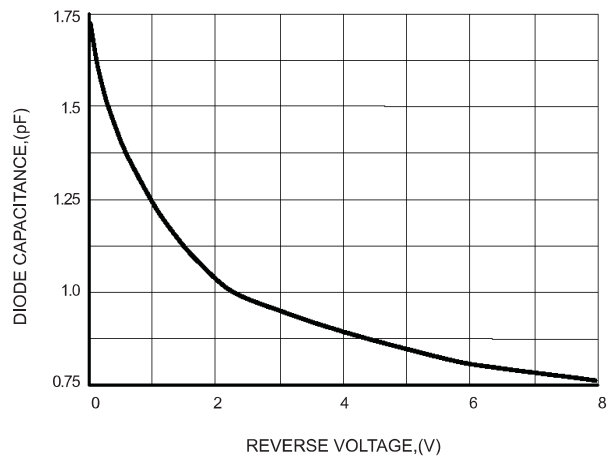
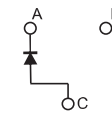
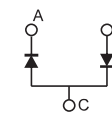
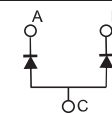
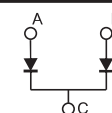


FIG.3b - TYPICAL DIODE CAPACITANCE BAW56-Q1

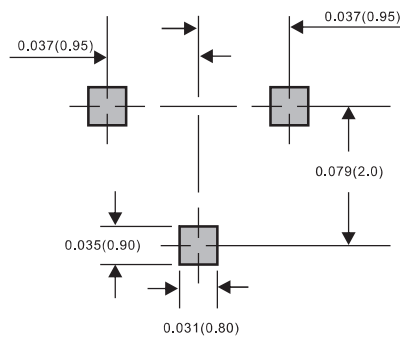


Pinning information

Type number	Marking code	Symbol
BAL99-Q1	L4, A6, JF	
BAV99-Q1	JG, A7 *	
BAW56-Q1	JC, A1 *	
BAV70-Q1	JA, A4 *	

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)