

Schottky Barrier Diodes, Dual Common Cathode BAT54CL

These Schottky barrier diodes are designed for high speed switching applications, circuit protection, and voltage clamping. Extremely low forward voltage reduces conduction loss. Miniature surface mount package is excellent for hand-held and portable applications where space is limited.

Features

- Extremely Fast Switching Speed
- Low Forward Voltage 0.35 V (Typ) @ $I_F = 10 \text{ mAdc}$
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS (T_J = 125°C unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	V _R	30	V
Forward Power Dissipation @ T _A = 25°C Derate above 25°C	P _F	225 1.8	mW mW/°C
Thermal Resistance (Note 1) Junction-to-Ambient (Note 2)	$R_{ heta JA}$	508 311	°C/W
Forward Current (DC)	IF	200 Max	mA
Non-Repetitive Peak Forward Current t _p < 10 msec	I _{FSM}	600	mA
Repetitive Peak Forward Current Pulse Wave = 1 sec, Duty Cycle = 66%	I _{FRM}	300	mA
Junction Temperature	T _J	-55 to +150	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

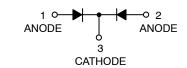
1

- 1. FR-4 @ Minimum Pad.
- 2. FR-4 @ 1.0 x 1.0 inch Pad.

30 VOLT DUAL COMMON CATHODE SCHOTTKY BARRIER DIODES



SOT-23 CASE 318 STYLE 9



MARKING DIAGRAM



5C = Device Code

M = Date Code

Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or position may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping [†]
BAT54CLT1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
SBAT54CLT1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
BAT54CLT3G	SOT-23 (Pb-Free)	10,000 / Tape & Reel

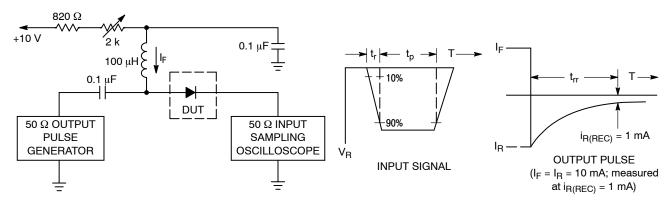
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

BAT54CL

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (EACH DIODE)

Characteristic	Symbol	Min	Тур	Max	Unit
Reverse Breakdown Voltage (I _R = 10 μA)	V _{(BR)R}	30	-	-	V
Total Capacitance (V _R = 1.0 V, f = 1.0 MHz)	C _T	-	7.6	10	pF
Reverse Leakage (V _R = 25 V)	I _R	-	0.5	2.0	μΑ
Forward Voltage (I _F = 0.1 mA) (I _F = 1.0 mA) (I _F = 10 mA) (I _F = 30 mA) (I _F = 100 mA)	V _F	- - - -	0.22 0.29 0.35 0.41 0.52	0.24 0.32 0.40 0.50 0.80	V
Reverse Recovery Time (I _F = I _R = 10 mAdc, I _{R(REC)} = 1.0 mAdc, Figure 1)	t _{rr}	-	-	5.0	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



Notes: 1. A 2.0 k Ω variable resistor adjusted for a Forward Current (IF) of 10 mA.

- 2. Input pulse is adjusted so $I_{R(peak)}$ is equal to 10 mA.
- 3. t_p » t_{ri}

Figure 1. Recovery Time Equivalent Test Circuit

BAT54CL

TYPICAL CHARACTERISTICS

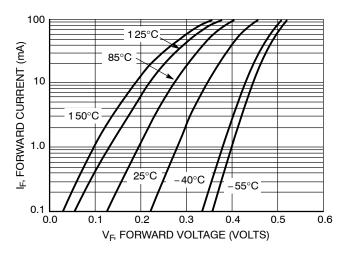


Figure 2. Forward Voltage

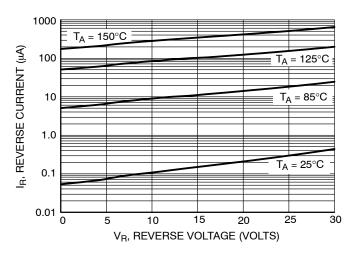


Figure 3. Leakage Current

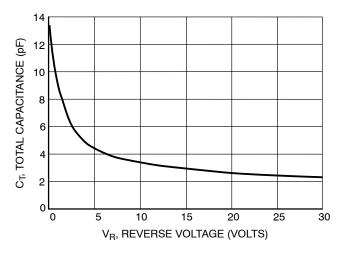


Figure 4. Total Capacitance

MILLIMETERS

MIN

0.89

0.01

0.37

0.08

2.80

1.20

1.78

0.30

0.35

2.10

O°

NOM

1.00

0.06

0.44

0.14

2.90

1.30

1.90

0.43

0.54

2.40





SOT-23 (TO-236) 2.90x1.30x1.00 1.90P **CASE 318 ISSUE AU**

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MAX

1.11

0.10

0.50

0.20

3.04

1.40

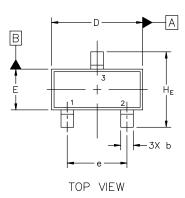
2.04

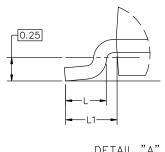
0.55

0.69

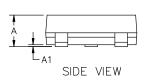
2.64

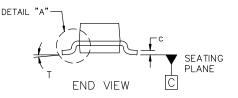
10°

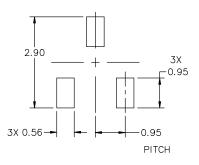




DETAIL "A" Scale 3:1







NOTES:

DIM

Α

Α1

b

С

D

Ε

е L

L1

HE

Τ

- DIMENSIONING AND TOLERANCING 1. PER ASME Y14.5M, 2018. CONTROLLING DIMENSIONS:
- MILLIMETERS.
- MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE
- BASE MATERIAL.
 DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

GENERIC MARKING DIAGRAM*



XXX = Specific Device Code

= Date Code

= Pb-Free Package

RECOMMENDED MOUNTING FOOTPRINT

* For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

STYLES ON PAGE 2

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^{*}This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "=", may or may not be present. Some products may not follow the Generic Marking.

SOT-23 (TO-236) 2.90x1.30x1.00 1.90P CASE 318 ISSUE AU

DATE 14 AUG 2024

STYLE 1 THRU 5: CANCELLED	STYLE 6: PIN 1. BASE 2. EMITTER 3. COLLECTOR			
STYLE 9: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 10: PIN 1. DRAIN 2. SOURCE 3. GATE	2. CATHODE 2.	2: STYLE 13: CATHODE PIN 1. SOURCE CATHODE 2. DRAIN ANODE 3. GATE	STYLE 14: PIN 1. CATHODE 2. GATE 3. ANODE
STYLE 15: PIN 1. GATE 2. CATHODE 3. ANODE	STYLE 16: PIN 1. ANODE 2. CATHODE 3. CATHODE	2. ANODE 2.	3: STYLE 19: NO CONNECTION PIN 1. CATHODE CATHODE 2. ANODE ANODE 3. CATHODE-ANODE	STYLE 20: PIN 1. CATHODE 2. ANODE 3. GATE
STYLE 21: PIN 1. GATE 2. SOURCE 3. DRAIN	STYLE 22: PIN 1. RETURN 2. OUTPUT 3. INPUT			STYLE 26: PIN 1. CATHODE 2. ANODE 3. NO CONNECTION
STYLE 27: PIN 1. CATHODE 2. CATHODE 3. CATHODE	STYLE 28: PIN 1. ANODE 2. ANODE 3. ANODE			

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