QSBT40

QUAD DATA LINE SCHOTTKY BUS TERMINATOR

Please click here to visit our online spice models database.

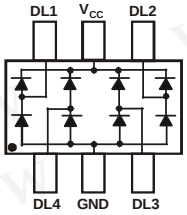
Features

- Low Forward Voltage Drop
- Fast Switching
- Very High Density
- Ultra-Small Surface Mount Package PN Junction Guard Ring for Transient and ESD Protection
- Provide Transient Protection for High-Speed Data Lines in Accordance With:
  IEC61000-4-2 (ESD) 15kV (Air), 8kV (Contact)
  IEC61000-4-4 (EFT) 80A (tp = 5/50 ns)
  IEC61000-4-5 (Lightning) Class 3
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

Top View

Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.006 grams (approximate)



Device Schematic

Maximum Ratings @T_A = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitance load, derate current by 20%.

Characteristic		Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage		V_{RRM} V_{RWM} V_R	30	V
Forward Continuous Current	(Note 1)	I_{FM}	200	mA
Non-Repetitive Peak Forward Surge Current	@ t < 1.0s	I_{FSM}	600	mA

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 1)	P_D	200	mW
Thermal Resistance Junction to Ambient Air	(Note 1)	$R_{\theta JA}$	625	°C/W
Operating Temperature Range		T_J	-55 to +125	°C
Storage Temperature Range		T_{STG}	-65 to +125	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	(Note 5)	$V_{(BR)R}$	30	—	—	V	I_R = 100μA
Forward Voltage		V_F	—	—	280 350 450 550 1000	mV	I_F = 0.1mA, tp < 300μS I_F = 1.0mA, tp < 300μS I_F = 10mA, tp < 300μS I_F = 30mA, tp < 300μS I_F = 100mA, tp < 300μS
Reverse Current	(Note 5)	I_R	—	—	2	μA	V_R = 25V
Total Capacitance		C_T	—	10.0 6.5	—	pF	V_R = 0, f = 1.0MH (Note 6) V_R = 0, f = 1.0MHz (Note 7)
Reverse Recovery Time		t_{rr}	—	—	5.0	ns	I_F = I_R = 10mA, I_{rr} = 0.1 x I_R, R_L = 100Ω

Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
2. No purposefully added lead.
3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
4. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
5. Short duration pulse test used to minimize self-heating effect.
6. At V_R = 0V, DL(X) to V_{CC} or GND.
7. At V_R = 0V, between Data Lines (e.g., DL1 and DL4).

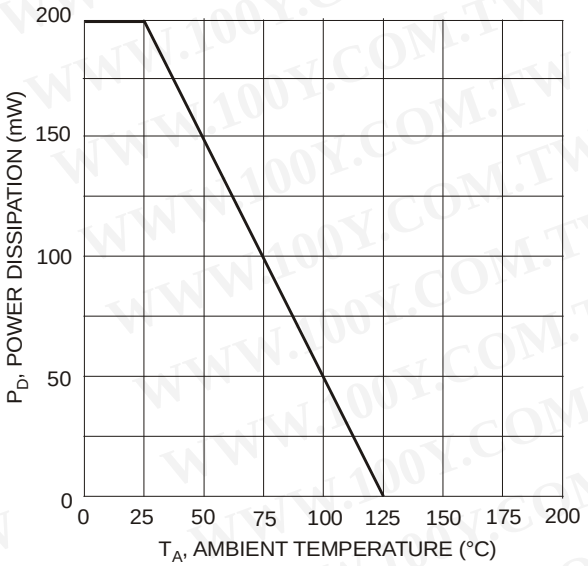


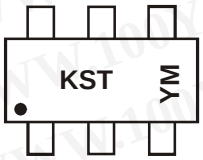
Fig. 1 Max Power Dissipation vs. Ambient Temperature

Ordering Information (Note 8)

Part Number	Case	Packaging
QSBT40-7-F	SOT-363	3000/Tape & Reel

Notes: 8. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



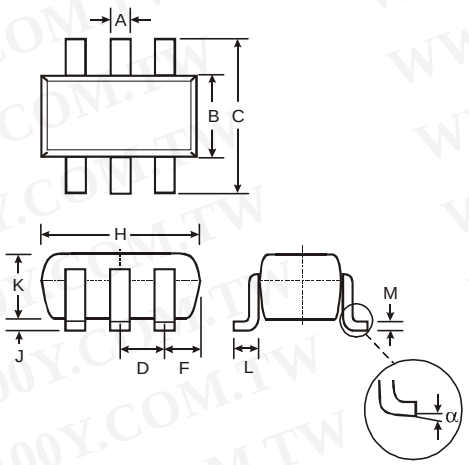
KST = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	M	N	P	R	S	T	U	V	W	X	Y	Z

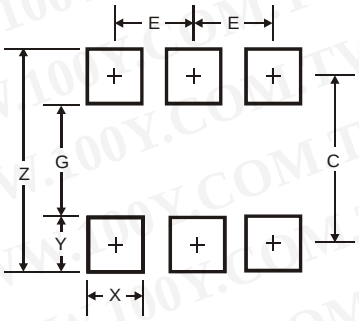
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C	1.9
E	0.65