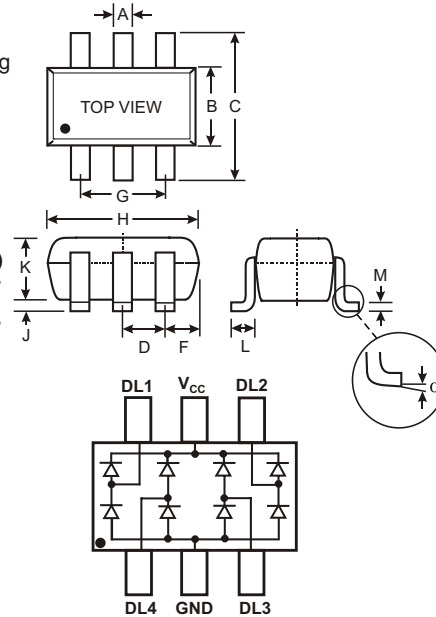


### Features

- 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
- Available in Lead Free/RoHS Compliant Version (Note 5)

### Mechanical Data

- Case: SOT-363
- Case material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Please See Ordering Information, Note 7, on Page 2
- Polarity: See Diagram
- Marking Code: KST (See Page 2)
- Weight: 0.006 grams (approx.)



| 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 |
| $\alpha$             | 0°           | 8°   |
| All Dimensions in mm |              |      |

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic   | Symbol   | Value       | Unit |
|--|--|-------------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 30          | V    |
| Forward Continuous Current (Note 1)  | I <sub>FM</sub>  | 200         | mA   |
| Non-Repetitive Peak Forward Surge Current @ t < 1.0s                                   | I <sub>FSM</sub>                                       | 600         | mA   |
| Power Dissipation (Note 1)   | P <sub>d</sub>   | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 1)                                    | R <sub>θJA</sub>                                       | 625         | °C/W |
| Operating Temperature Range  | T <sub>j</sub>   | -55 to +125 | °C   |
| Storage Temperature Range  | T <sub>STG</sub>                                       | -65 to +125 | °C   |

### Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                     | Symbol             | Min | Typ         | Max                              | Unit | Test Condition   |
|------------------------------------|--------------------|-----|-------------|----------------------------------|------|--|
| Reverse Breakdown Voltage (Note 2) | V <sub>(BR)R</sub> | 30  | —           | —                                | V    | I <sub>R</sub> = 100μA   |
| Forward Voltage (Note 2)           | V <sub>F</sub>     | —   | —           | 280<br>350<br>450<br>550<br>1000 | mV   | I <sub>F</sub> = 0.1mA, tp < 300μS<br>I <sub>F</sub> = 1.0mA, tp < 300μS<br>I <sub>F</sub> = 10mA, tp < 300μS<br>I <sub>F</sub> = 30mA, tp < 300μS<br>I <sub>F</sub> = 100mA, tp < 300μS |
| Reverse Current (Note 2)           | I <sub>R</sub>     | —   | —           | 2                                | μA   | V <sub>R</sub> = 25V   |
| Total Capacitance                  | C <sub>T</sub>     | —   | 10.0<br>6.5 | —                                | pF   | V <sub>R</sub> = 0, f = 1.0MHz (Note 3)<br>V <sub>R</sub> = 0, f = 1.0MHz (Note 4)   |
| Reverse Recovery Time              | t <sub>rr</sub>    | —   | —           | 5.0                              | ns   | I <sub>F</sub> = I <sub>R</sub> = 10mA,<br>I <sub>rr</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω  |

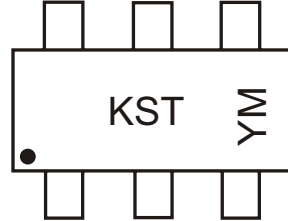
- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Short duration test pulse used to minimize self-heating effect.
  3. At V<sub>R</sub> = 0V, DL(X) to V<sub>CC</sub> or GND.
  4. At V<sub>R</sub> = 0V, between Data Lines (e.g., DL1 and DL4).
  5. No purposefully added lead.

**Ordering Information** (Note 6)

| Device   | Packaging | Shipping         |
|----------|-----------|------------------|
| QSBT40-7 | SOT-363   | 3000/Tape & Reel |

- Notes: 6. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
 7. For Lead Free/RoHS Compliant version part number, please add "-F" suffix to the part number above. Example: QSBT40-7-F.

**Marking Information**

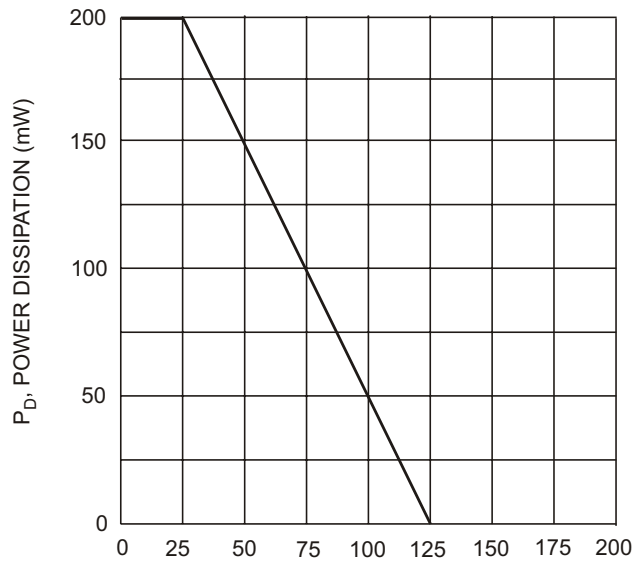


KST = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

Date Code Key

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|------|
| Code | M    | N    | P    | R    | S    | T    | U    | V    | W    |

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



$T_A$ , AMBIENT TEMPERATURE (°C)  
 Fig. 1, Max Power Dissipation vs Ambient Temperature