# SMC8205AS6-TRG-VB Datasheet

## Dual N-Channel MOSFET

| PRODUCT SUMMARY | | |
|---|---|---|
| $V_{DS}$ (V) | $R_{DS(on)}$ (Ω) | $I_D$ (A) |
| 20 | 0.024 at $V_{GS}$ = 4.5 V | 6.0 |
| | 0.028 at $V_{GS}$ = 2.5 V | 5.0 |

### FEATURES

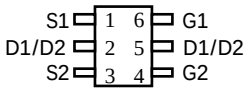
- **Halogen-free Option Available**
- TrenchFET® Power MOSFETs
- 100 % $R_g$ Tested
- Compliant to RoHS Directive 2002/95/EC

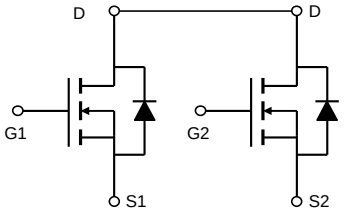
Pb-free Available

RoHS* COMPLIANT

**TSOP6**

**Top View**




| ABSOLUTE MAXIMUM RATINGS $T_A$ = 25 °C, unless otherwise noted | | | | | |
|---|---|---|---|---|---|
| **Parameter** | | **Symbol** | **10 s** | **Steady State** | **Unit** |
| Drain-Source Voltage | | $V_{DS}$ | 20 | | V |
| Gate-Source Voltage | | $V_{GS}$ | ± 12 | | |
| Continuous Drain Current ($T_J$ = 150 °C)[a] | $T_A$ = 25 °C | $I_D$ | 6.0 | 5.2 | A |
| | $T_A$ = 70 °C | | 4.8 | 4.2 | |
| Pulsed Drain Current | | $I_{DM}$ | 30 | | |
| Continuous Source Current (Diode Conduction)[a] | | $I_S$ | 1.5 | 1.0 | |
| Maximum Power Dissipation[a] | $T_A$ = 25 °C | $P_D$ | 1.5 | 1.0 | W |
| | $T_A$ = 70 °C | | 0.96 | 0.64 | |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{stg}$ | - 55 to 150 | | °C |

| THERMAL RESISTANCE RATINGS | | | | | |
|---|---|---|---|---|---|
| **Parameter** | | **Symbol** | **Typ.** | **Max.** | **Unit** |
| Maximum Junction-to-Ambient[a] | t ≤ 10 s | $R_{thJA}$ | 72 | 83 | °C/W |
| | Steady State | | 100 | 120 | |
| Maximum Junction-to-Foot (Drain) | Steady State | $R_{thJF}$ | 55 | 70 | |

Notes:
a. Surface Mounted on FR4 board, t ≤ 10 s.

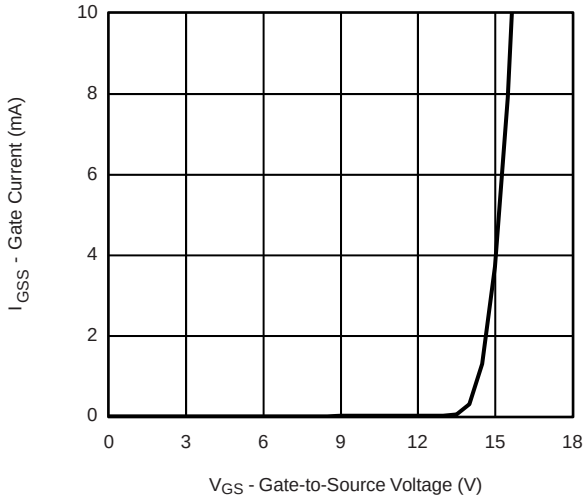
* Pb containing terminations are not RoHS compliant, exemptions may apply.

| **SPECIFICATIONS** $T_J$ = 25 °C, unless otherwise noted | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | **Min.** | **Typ.[a]** | **Max.** | **Unit** |
| **Static** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250 µA | 0.5 | | 1.5 | V |
| Gate-Body Leakage | $I_{GSS}$ | $V_{DS}$ = 0 V, $V_{GS}$ = ± 4.5 V | | | ± 200 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 20 V, $V_{GS}$ = 0 V | | | 1 | µA |
| | | $V_{DS}$ = 20 V, $V_{GS}$ = 0 V, $T_J$ = 70 °C | | | 25 | |
| On-State Drain Current[b] | $I_{D(on)}$ | $V_{DS}$ ≤ 5 V, $V_{GS}$ = 4.5 V | 30 | | | A |
| Drain-Source On-State Resistance[b] | $R_{DS(on)}$ | $V_{GS}$ = 4.5 V, $I_D$ = 5.5 A | | 0.024 | | Ω |
| | | $V_{GS}$ = 2.5 V, $I_D$ = 3.5 A | | 0.028 | | |
| Forward Transconductance[b] | $g_{fs}$ | $V_{DS}$ = 10 V, $I_D$ = 5.5 A | | 30 | | S |
| Diode Forward Voltage[b] | $V_{SD}$ | $I_S$ = 1.5 A, $V_{GS}$ = 0 V | | 0.71 | 1.2 | V |
| **Dynamic[a]** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ = 10 V, $V_{GS}$ = 4.5 V, $I_D$ = 5.5 A | | 12 | 18 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 2.2 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 3.6 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}$ = 10 V, $R_L$ = 10 Ω<br>$I_D$ ≅ 1 A, $V_{GEN}$ = 4.5 V, $R_G$ = 6 Ω | | 245 | 365 | ns |
| Rise Time | $t_r$ | | | 330 | 495 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 860 | 1300 | |
| Fall Time | $t_f$ | | | 510 | 765 | |

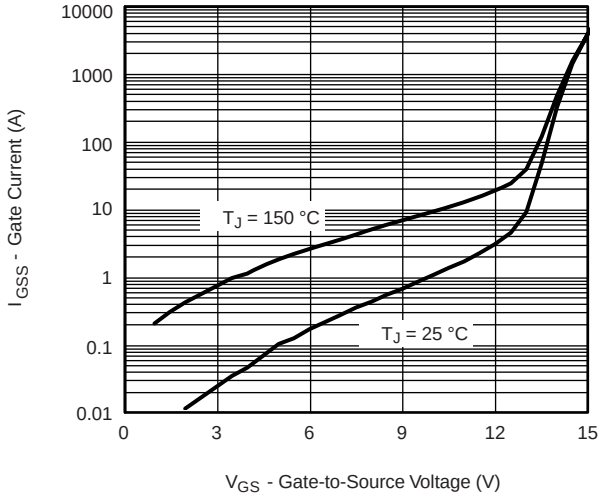
Notes:
a. For design aid only; not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.

*Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.*

## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

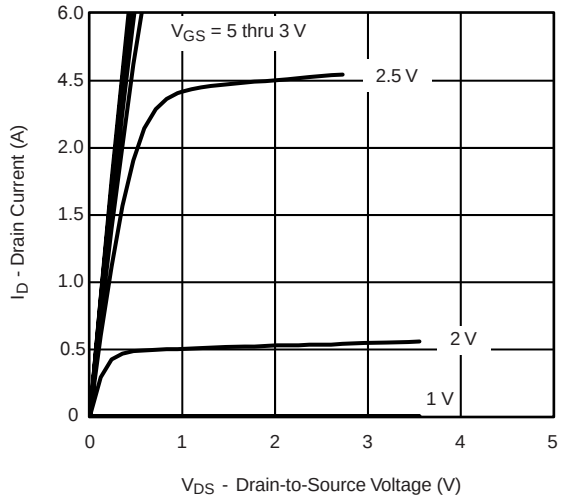



**Gate-Current vs. Gate-Source Voltage**

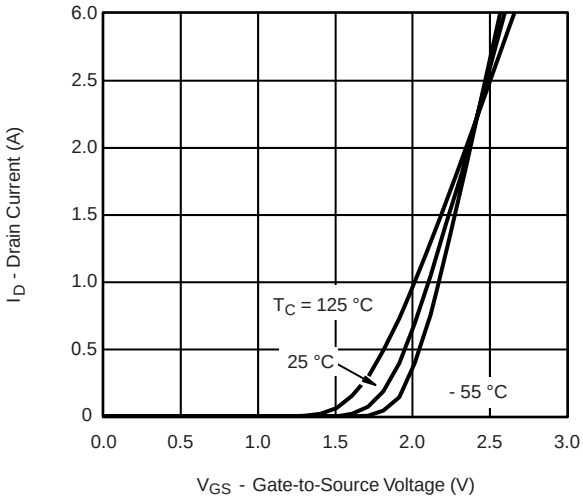



**Gate Current vs. Gate-Source Voltage**

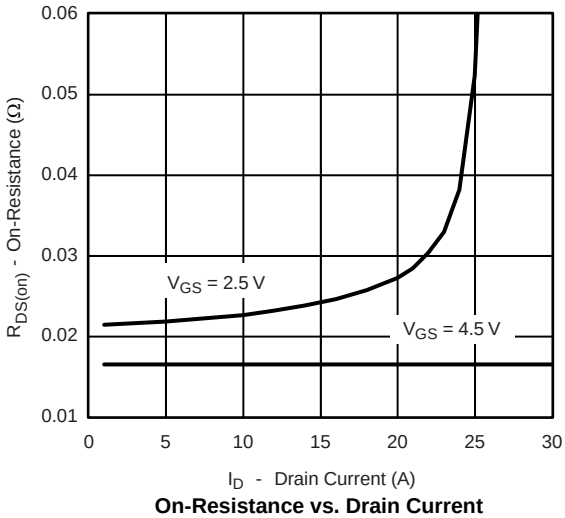
## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



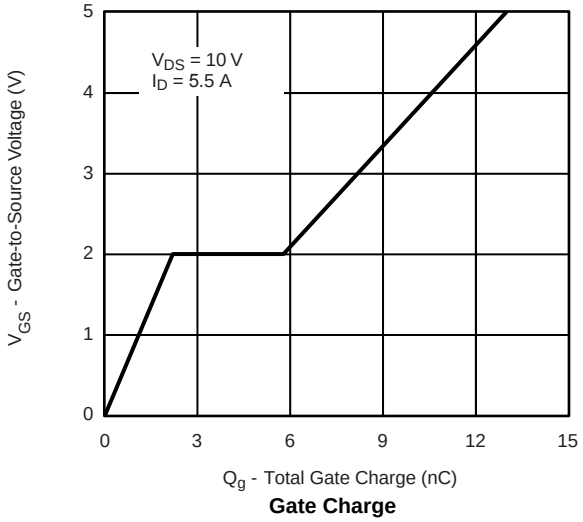

**Output Characteristics**



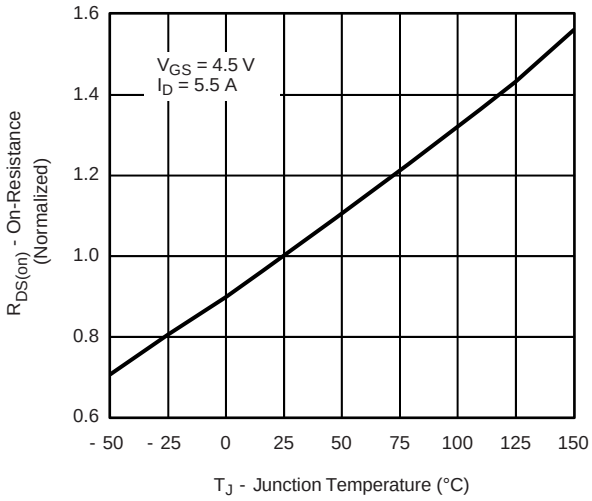

**Transfer Characteristics**



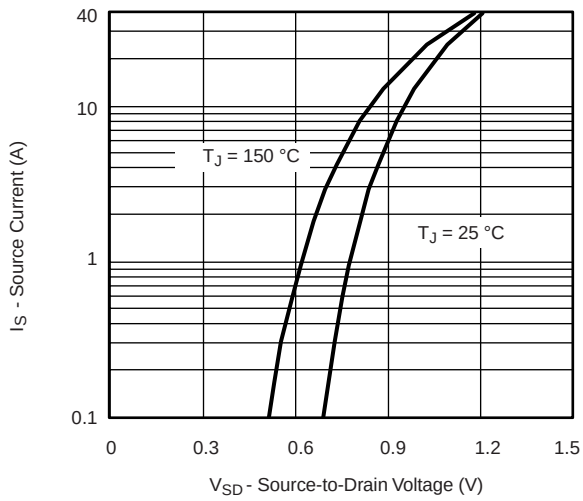

**On-Resistance vs. Drain Current**




**Gate Charge**

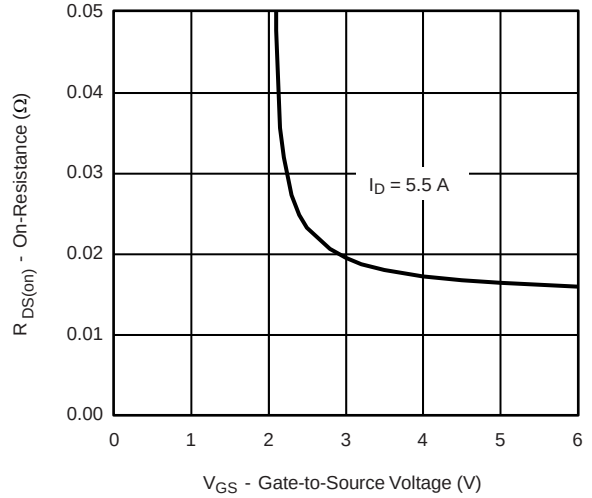



**On-Resistance vs. Junction Temperature**

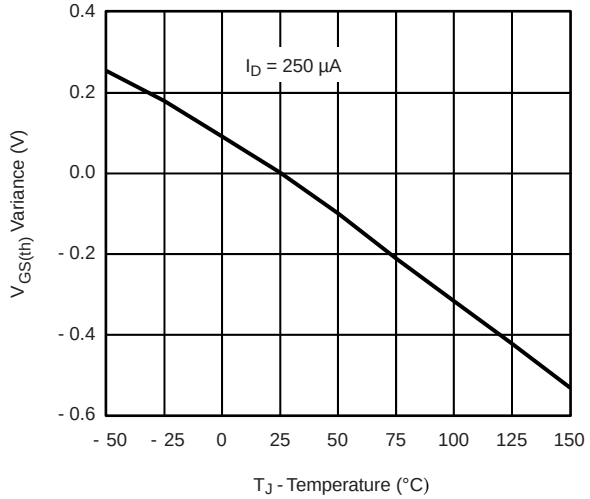



**Source-Drain Diode Forward Voltage**

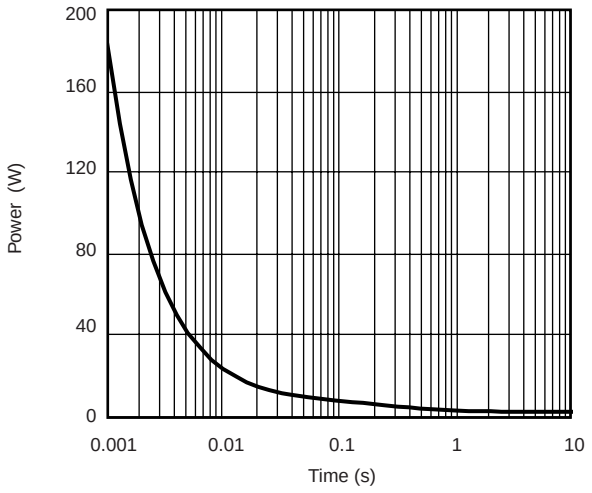
## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



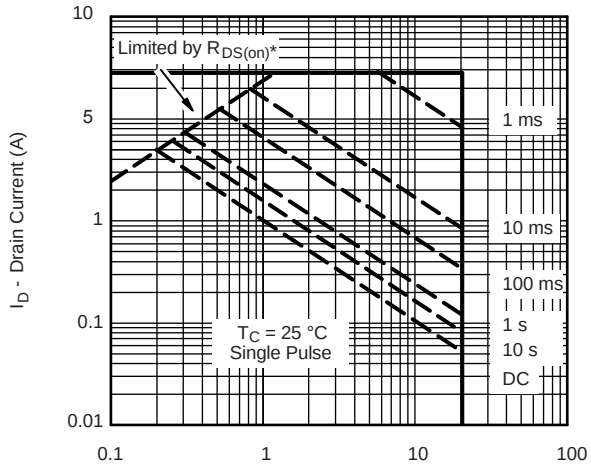

**On-Resistance vs. Gate-to-Source Voltage**




**Threshold Voltage**

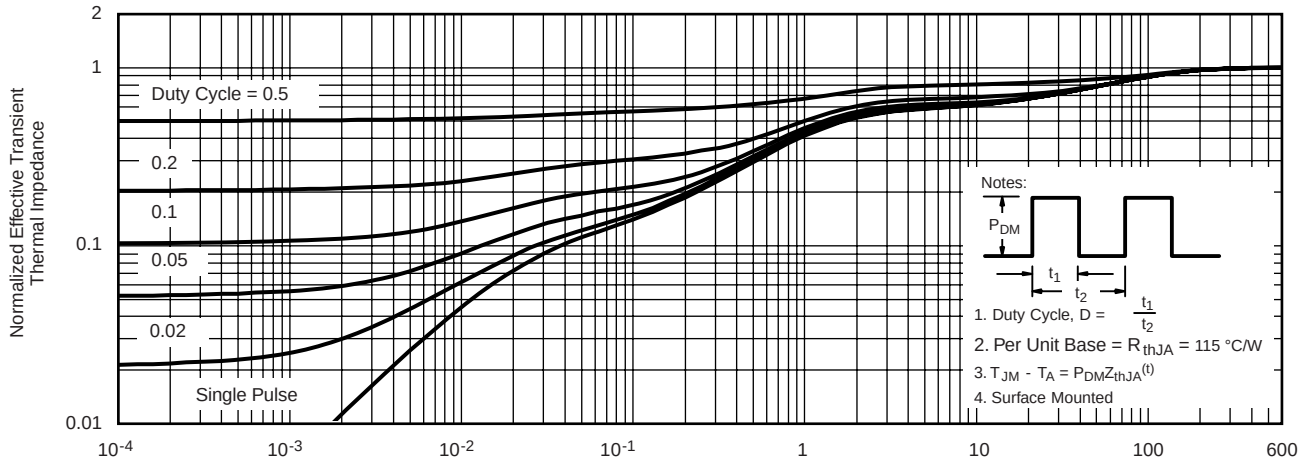



**Single Pulse Power**



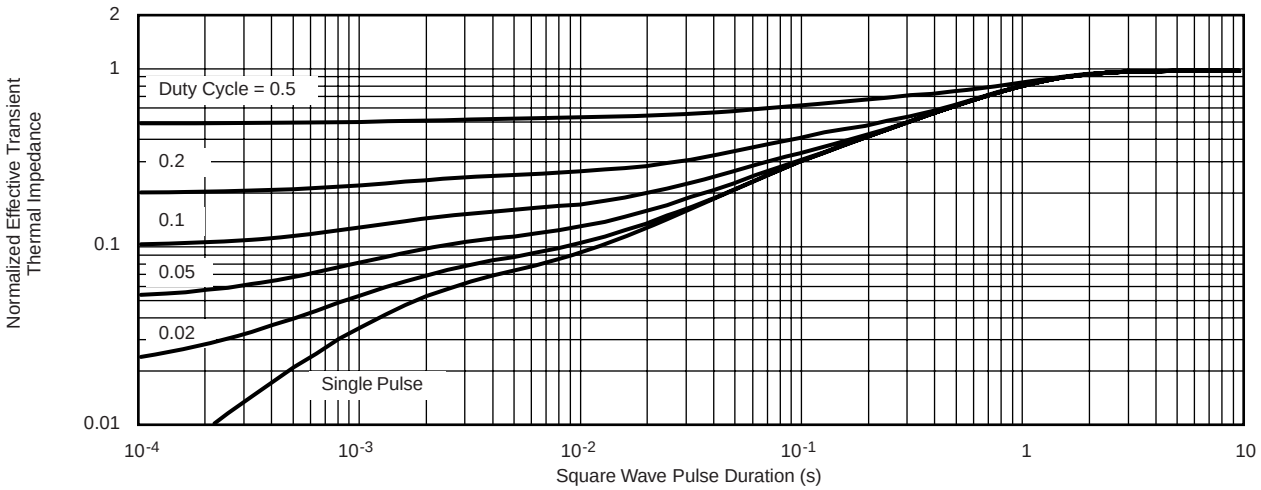

* $V_{GS}$ > minimum $V_{GS}$ at which $R_{DS(on)}$ is specified

**Safe Operating Area, Junction-to-Case**




**Normalized Thermal Transient Impedance, Junction-to-Ambient**

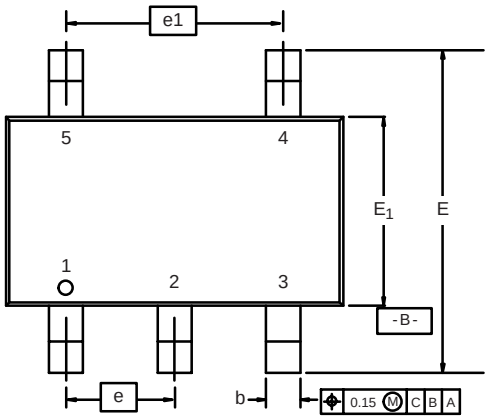
**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted



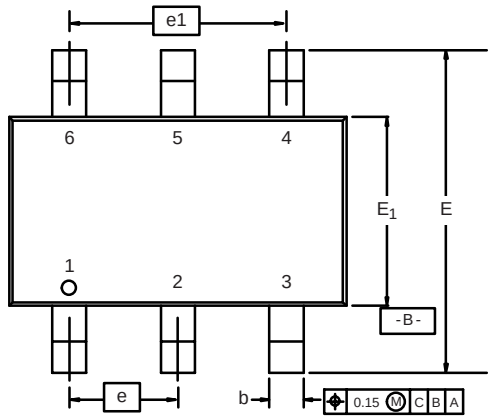

**Normalized Thermal Transient Impedance, Junction-to-Foot**

## TSOP: 5/6−LEAD

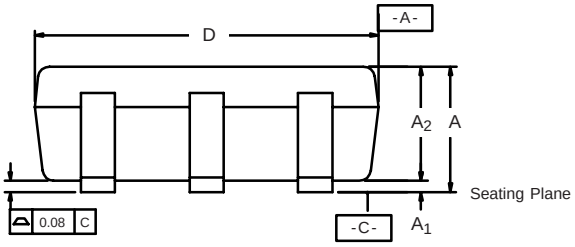
**JEDEC Part Number: MO-193C**

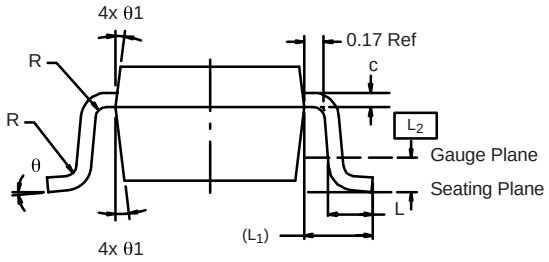



**5-LEAD TSOP**



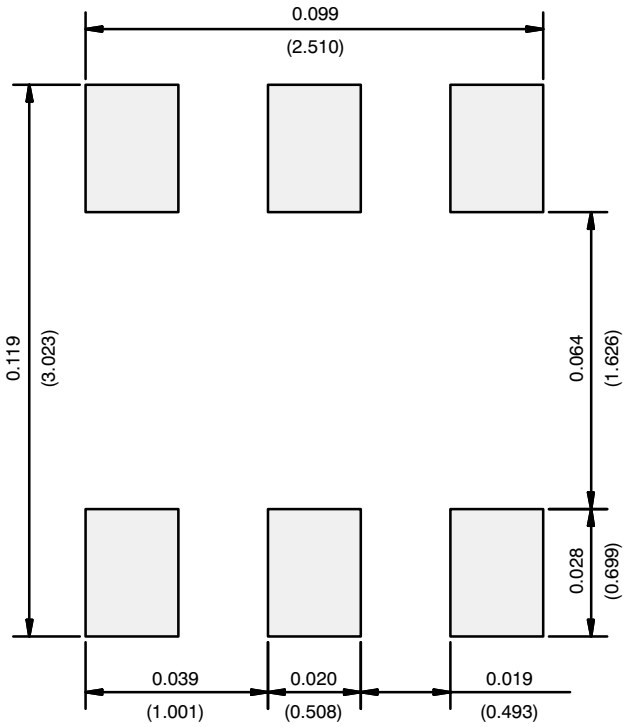

**6-LEAD TSOP**




| Dim | MILLIMETERS | | | INCHES | | |
|---|---|---|---|---|---|---|
| | Min | Nom | Max | Min | Nom | Max |
| A | 0.91 | - | 1.10 | 0.036 | - | 0.043 |
| $A_1$ | 0.01 | - | 0.10 | 0.0004 | - | 0.004 |
| $A_2$ | 0.90 | - | 1.00 | 0.035 | 0.038 | 0.039 |
| b | 0.30 | 0.32 | 0.45 | 0.012 | 0.013 | 0.018 |
| c | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.008 |
| D | 2.95 | 3.05 | 3.10 | 0.116 | 0.120 | 0.122 |
| E | 2.70 | 2.85 | 2.98 | 0.106 | 0.112 | 0.117 |
| $E_1$ | 1.55 | 1.65 | 1.70 | 0.061 | 0.065 | 0.067 |
| e | 0.95 BSC | | | 0.0374 BSC | | |
| $e_1$ | 1.80 | 1.90 | 2.00 | 0.071 | 0.075 | 0.079 |
| L | 0.32 | - | 0.50 | 0.012 | - | 0.020 |
| $L_1$ | 0.60 Ref | | | 0.024 Ref | | |
| $L_2$ | 0.25 BSC | | | 0.010 BSC | | |
| R | 0.10 | - | - | 0.004 | - | - |
| θ | 0° | 4° | 8° | 0° | 4° | 8° |
| $θ_1$ | 7° Nom | | | 7° Nom | | |
| ECN: C-06593-Rev. I, 18-Dec-06<br>DWG: 5540 | | | | | | |

## RECOMMENDED MINIMUM PADS FOR TSOP-6




Recommended Minimum Pads
Dimensions in Inches/(mm)

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Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

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**Üreticileri görün**

### Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

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