

RoHS Compliant Product
A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation.

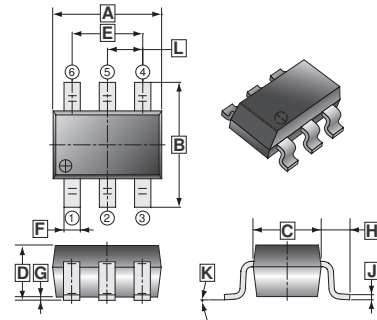
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe TSOP-6 saves board space
- Fast switching speed
- High performance trench technology

APPLICATION

DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

TSOP-6



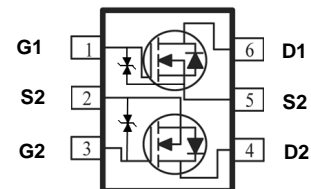
| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 2.70 | 3.10 | G | 0 | 0.10 |
| B | 2.60 | 3.00 | H | 0.60 | REF. |
| C | 1.40 | 1.80 | J | 0.12 | REF. |
| D | 1.10 | MAX. | K | 0° | 10° |
| E | 1.90 | REF. | L | 0.95 | REF. |
| F | 0.30 | 0.50 | | | |

PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---------|-----|-------------|
| TSOP-6 | 3K | 7 inch |



ESD
Protection Diode
2KV



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Ratings | Unit |
|---|-----------------|------------------------|------------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ¹ | I_D | $T_A=25^\circ\text{C}$ | 2.3 |
| | | $T_A=70^\circ\text{C}$ | 1.9 |
| Pulsed Drain Current ² | I_{DM} | 8 | A |
| Continuous Source Current (Diode Conduction) ¹ | I_S | 1.05 | A |
| Power Dissipation ¹ | P_D | $T_A=25^\circ\text{C}$ | 1.15 |
| | | $T_A=70^\circ\text{C}$ | 0.7 |
| Operating Junction and Storage Temperature Range | T_j, T_{stg} | -55~150 | $^\circ\text{C}$ |
| Thermal Resistance Rating | | | |
| Maximum Junction to Ambient ¹ | $R_{\theta JA}$ | $t \leq 10$ sec | 100 |
| | | Steady State | 166 |

Notes:

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Teat Conditions |
|---|--------------|------|------|-------|---------------|--|
| Static | | | | | | |
| Gate-Threshold Voltage | $V_{GS(th)}$ | 1 | - | - | V | $V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$ |
| Gate-Body Leakage Current | I_{GSS} | - | - | 100 | μA | $V_{DS}=0$, $V_{GS}=20\text{V}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | - | - | 1 | μA | $V_{DS}=48\text{V}$, $V_{GS}=0$ |
| | | - | - | 10 | | $V_{DS}=48\text{V}$, $V_{GS}=0$, $T_J=55^\circ\text{C}$ |
| On-State Drain Current ¹ | $I_{D(on)}$ | 5 | - | - | A | $V_{DS}=5\text{V}$, $V_{GS}=10\text{V}$ |
| Drain-Source On-Resistance ¹ | $R_{DS(ON)}$ | - | - | 0.153 | Ω | $V_{GS}=10\text{V}$, $I_D=2.3\text{A}$ |
| | | - | - | 0.185 | | $V_{GS}=4.5\text{V}$, $I_D=2.1\text{A}$ |
| Forward Transconductance ¹ | g_{fs} | - | 10 | - | S | $V_{DS}=5\text{V}$, $I_D=2.3\text{A}$ |
| Diode Forward Voltage ¹ | V_{SD} | - | 0.8 | - | V | $I_S=1.05\text{A}$, $V_{GS}=0$ |
| Dynamic ² | | | | | | |
| Total Gate Charge | Q_g | - | 3 | - | nC | $V_{DS}=15\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=2.3\text{A}$ |
| Gate-Source Charge | Q_{gs} | - | 0.6 | - | | |
| Gate-Drain Charge | Q_{gd} | - | 1 | - | | |
| Turn-on Delay Time | $T_{d(on)}$ | - | 5 | - | nS | $V_{DD}=15\text{V}$, $V_{GS}=4.5\text{V}$, $R_{GEN}=15\Omega$, $I_D=1\text{A}$ |
| Rise Time | T_r | - | 12 | - | | |
| Turn-off Delay Time | $T_{d(off)}$ | - | 13 | - | | |
| Fall Time | T_f | - | 7 | - | | |

Notes:

1. Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.