

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

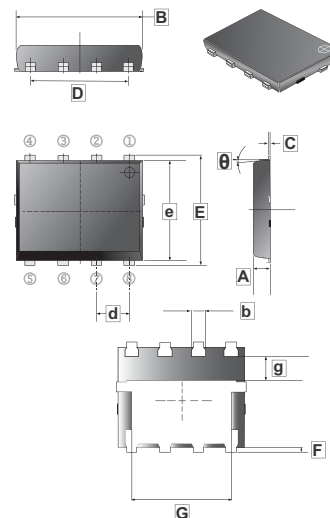
DESCRIPTION

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

FEATURES

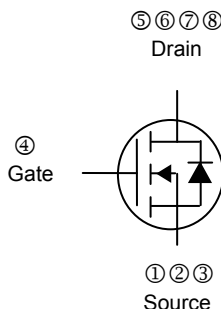
- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOP-8PP saves board space.
- Fast switching speed.
- High performance trench technology.

SOP-8PP



PRODUCT SUMMARY

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|-----------------|----------------------------|----------|
| $V_{DS}(V)$ | $R_{DS(on)}$ (m Ω) | $I_D(A)$ |
| 40 | 15@ $V_{GS}=10V$ | 15 |
| | 18@ $V_{GS}=4.5V$ | 14 |



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|----------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 1.00 | 1.10 | θ | 0° | 12° |
| B | 5.70 | 5.80 | b | 0.33 | 0.51 |
| C | 0.20 | 0.30 | d | 1.27BSC | |
| D | 3.61 | 3.98 | e | 1.35 | 1.75 |
| E | 5.40 | 6.10 | g | 1.10 | - |
| F | 0.08 | 0.20 | | | |
| G | 3.60 | 3.99 | | | |

ABSOLUTE MAXIMUM RATINGS AND THERMAL DATA ($T_A = 25^\circ C$ unless otherwise specified)

| PARAMETER | SYMBOL | RATING | UNIT |
|---|-----------------|------------------|------------|
| Drain-Source Voltage | V_{DS} | 40 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Continuous Drain Current ^A | I_D | $T_A=25^\circ C$ | 15 |
| | | $T_A=70^\circ C$ | 13 |
| Pulsed Drain Current ^B | I_{DM} | 50 | A |
| Continuous Source Current (Diode Conduction) ^A | I_S | 2.3 | A |
| Power Dissipation ^A | P_D | $T_A=25^\circ C$ | 5.0 |
| | | $T_A=70^\circ C$ | 3.2 |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 ~ 150 | $^\circ C$ |
| THERMAL RESISTANCE DATA | | | |
| Maximum Junction to Ambient ^A | $R_{\theta JA}$ | $t \leq 10$ sec | 25 |
| | | Steady-State | 65 |

Notes

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

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

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT | TEST CONDITIONS |
|---|--------------|-----|-----|-----------|---------------|---|
| Static | | | | | | |
| Gate-Threshold Voltage | $V_{GS(th)}$ | 1 | - | - | V | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ |
| Gate-Body Leakage | I_{GSS} | - | - | ± 100 | nA | $V_{DS} = 0\text{V}, V_{GS} = 20\text{V}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | - | - | 1 | μA | $V_{DS} = 32\text{V}, V_{GS} = 0\text{V}$ |
| | | - | - | 25 | | $V_{DS} = 32\text{V}, V_{GS} = 0\text{V}, T_J=55^\circ\text{C}$ |
| On-State Drain Current ^A | $I_{D(ON)}$ | 34 | - | - | A | $V_{DS} = 5\text{V}, V_{GS} = 10\text{V}$ |
| Drain-Source On-Resistance ^A | $R_{DS(ON)}$ | - | - | 15 | m Ω | $V_{GS} = 10\text{V}, I_D = 7.5\text{A}$ |
| | | - | - | 18 | | $V_{GS} = 4.5\text{V}, I_D = 7\text{A}$ |
| Forward Transconductance ^A | g_{FS} | - | 22 | - | S | $V_{DS} = 15\text{V}, I_D = 7.5\text{A}$ |
| Diode Forward Voltage | V_{SD} | - | 1.1 | - | V | $I_S = 2.1\text{A}, V_{GS} = 0\text{V}$ |
| Dynamic ^b | | | | | | |
| Total Gate Charge | Q_g | - | 4.0 | - | nC | $I_D = 7.5\text{A}$ |
| Gate-Source Charge | Q_{gs} | - | 1.1 | - | | $V_{DS} = 15\text{V}$ |
| Gate-Drain Charge | Q_{gd} | - | 1.4 | - | | $V_{GS} = 4.5\text{V}$ |
| Turn-On Delay Time | $T_{d(ON)}$ | - | 16 | - | nS | $I_D = 34\text{A}, V_{DD} = 25\text{V}$ $V_{GEN} = 10\text{V}$ $R_L = 25\Omega$ |
| Rise Time | T_r | - | 5 | - | | |
| Turn-Off Delay Time | $T_{d(OFF)}$ | - | 23 | - | | |
| Fall Time | T_f | - | 3 | - | | |

Notes

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