

Features

- Trench Power LV MOSFET Technology
- High Speed Switching
- High Density Cell Desihn for Low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

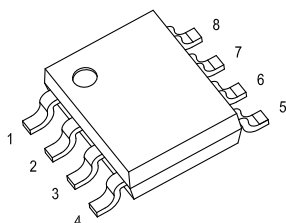
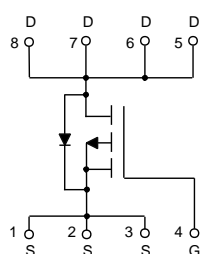
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 39°C/W Junction to Ambient^(Note 1)

| Parameter | | Symbol | Rating | Unit |
|---|----------------------|-----------------|--------|------|
| Drain-Source Voltage | | V _{DS} | -30 | V |
| Gate-Source Voltlage | | V _{GS} | ±25 | V |
| Continuous Drain Current | T _A =25°C | I _D | -12 | A |
| | T _A =70°C | | -10 | A |
| Pulsed Drain Current ^(Note 2) | | I _{DM} | -55 | A |
| Single Pulse Avalanche Energy ^(Note 3) | | E _{AS} | 105 | mJ |
| Total Power Dissipation ^(Note 4) | | P _D | 3.2 | W |

Note:

- 1.The Value of $R_{\theta JA}$ is Measured with the Device Mounted on 1in² FR-4 Board with 2oz. Copper, in a Still Air Environment with $T_A=25^\circ\text{C}$. The Value in Any Given Application Depends on the User's Specific Board Design.
- 2.Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- 3.Repetitive Rating, Pulse Width Limited by Junction Temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are Based on Low Frequency and Duty Cycles to Keep Initial $T_J=25^\circ\text{C}$.
- 4.The Power Dissipation P_D is Based on $T_{J(MAX)}=150^\circ\text{C}$, Using $\leq 10\text{s}$ Junction-to-Ambient Thermal Resistance.

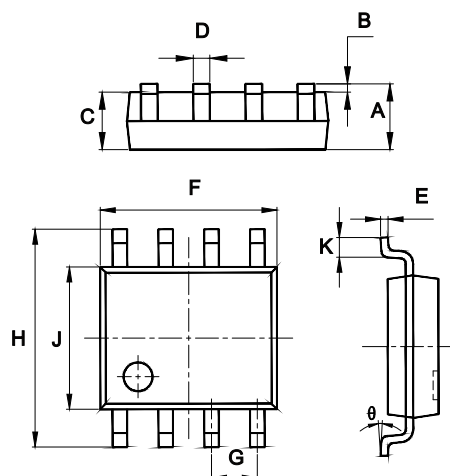
Internal Structure



Marking:Q4407B

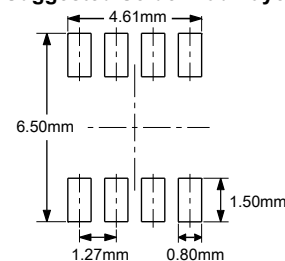
P-CHANNEL MOSFET

SOP-8



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|-------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.053 | 0.069 | 1.35 | 1.75 | |
| B | 0.004 | 0.010 | 0.10 | 0.25 | |
| C | 0.053 | 0.061 | 1.35 | 1.55 | |
| D | 0.013 | 0.020 | 0.33 | 0.51 | |
| E | 0.007 | 0.010 | 0.17 | 0.25 | |
| F | 0.185 | 0.200 | 4.70 | 5.10 | |
| G | 0.050 | | 1.270 | | TYP. |
| H | 0.228 | 0.244 | 5.80 | 6.20 | |
| J | 0.150 | 0.157 | 3.80 | 4.00 | |
| K | 0.016 | 0.050 | 0.40 | 1.27 | |
| θ | 0° | 8° | 0° | 8° | |

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------|----------------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} =0V, I _D =-250μA | -30 | | | V |
| Gate-Source Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±25V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-30V, V _{GS} =0V | | | -1 | μA |
| Gate-Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =-250μA | -1.2 | -1.8 | -2.8 | V |
| Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =-20V, I _D =-12A | | 9 | 10.5 | mΩ |
| | | V _{GS} =-10V, I _D =-12A | | 10.2 | 12.5 | |
| | | V _{GS} =-6V, I _D =-10A | | 12.3 | 16.5 | |
| | | V _{GS} =-4.5V, I _D =-10A | | 16 | 25 | |
| Diode Forward Voltage | V _{SD} | V _{GS} =0V, I _S =-12A | | -0.8 | -1.2 | V |
| Continuous Body Diode Current | I _S | | | | -12 | A |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =-15V,V _{GS} =0V,f=1MHz | | 2050 | | pF |
| Output Capacitance | C _{oss} | | | 355 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 301 | | |
| Switching Characteristics | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =-15V,V _{GS} =-10V,I _D =-12A | | 29.8 | | nC |
| Gate-Source Charge | Q _{gs} | | | 4.7 | | |
| Gate-Drain Charge | Q _{gd} | | | 10 | | |
| Turn-On Delay Time | t _{d(on)} | V _{GS} =-10V,V _{DD} =-15V, I _D =-1A, R _{GEN} =2.5Ω | | 14 | | ns |
| Turn-On Rise Time | t _r | | | 12 | | |
| Turn-Off Delay Time | t _{d(off)} | | | 26 | | |
| Turn-Off Fall Time | t _f | | | 10 | | |

Curve Characteristics

Fig. 1 - Typical Output Characteristics

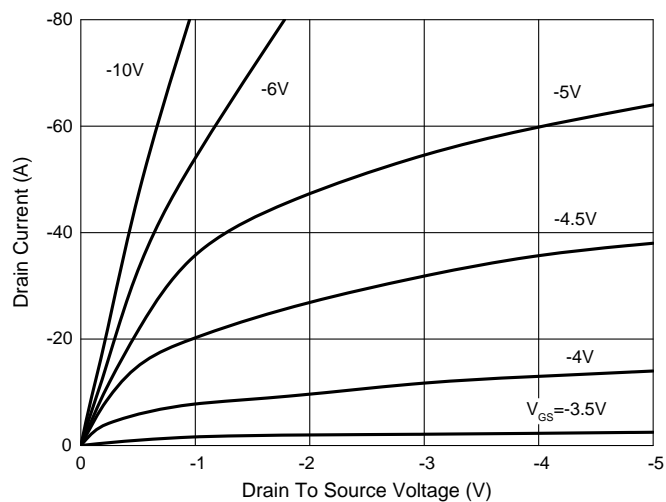


Fig. 2 - Transfer Characteristics

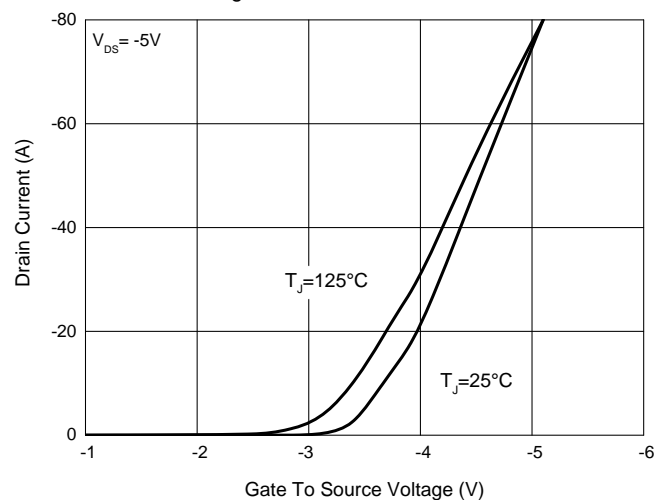


Fig. 3 - Capacitance Characteristics

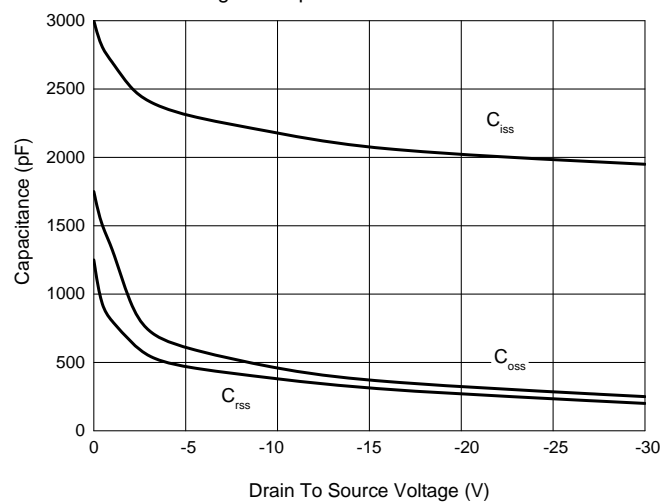


Fig. 4 - $R_{DS(ON)} - I_D$

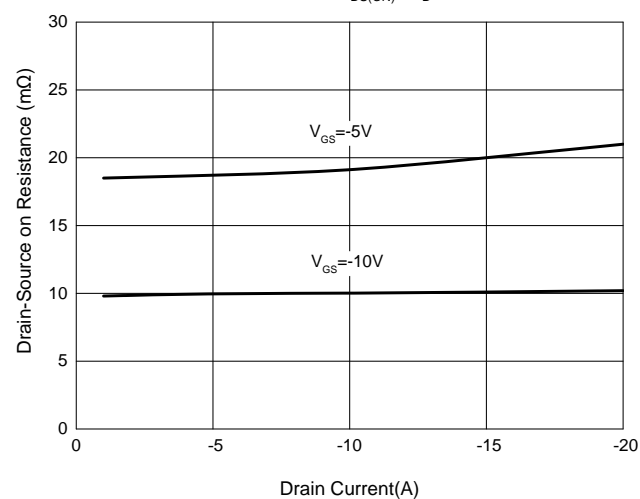


Fig. 5 - Total Gate Charge Characteristics

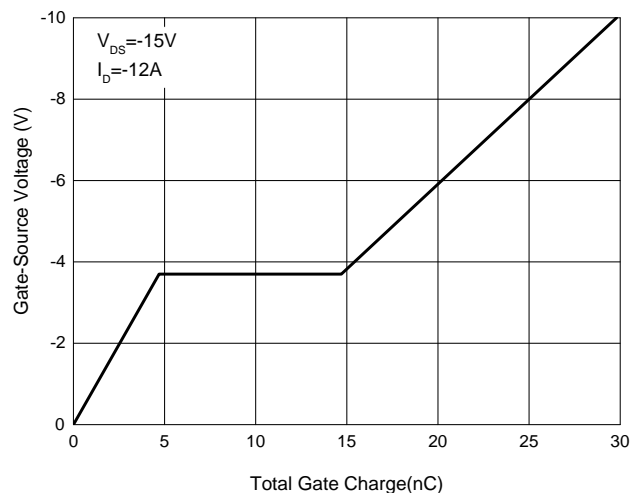
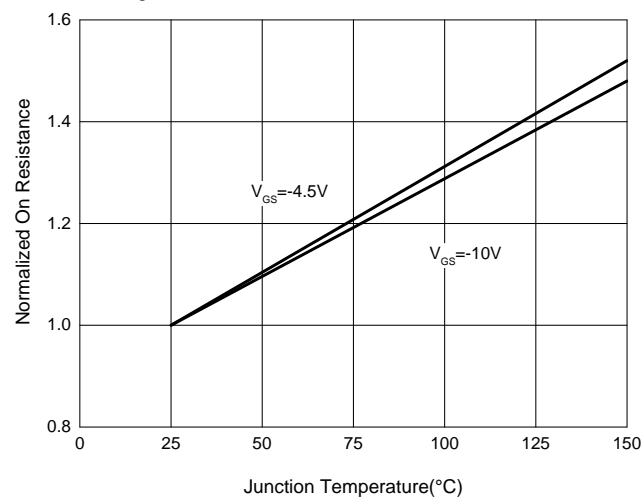


Fig. 6 - Normalized On Resistance Characteristics



Ordering Information

| Device | Packing |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 4Kpcs/Reel |

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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