

General Description

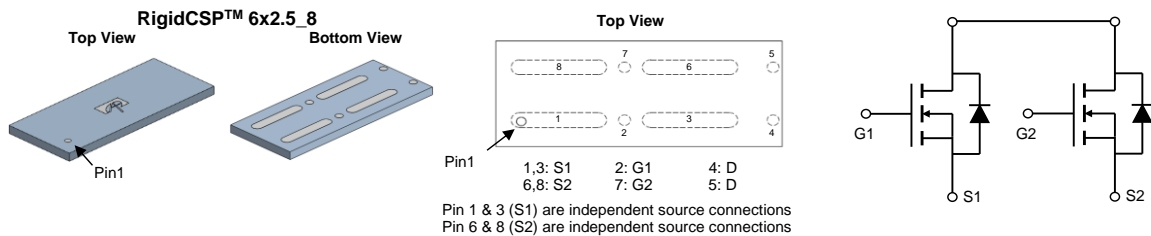
- Trench Power MOSFET technology
- Low $R_{SS(ON)}$
- Common drain configuration for design simplicity
- RoHS and Halogen-Free Compliant

Applications

- Battery protection switch
- Mobile device battery charging and discharging

Product Summary

| | |
|----------------------------------|-----------------|
| V_{SS} | 30V |
| $R_{SS(ON)}$ (at $V_{GS}=10V$) | < 2.6m Ω |
| $R_{SS(ON)}$ (at $V_{GS}=8V$) | < 2.9m Ω |
| $R_{SS(ON)}$ (at $V_{GS}=4.5V$) | < 4.2m Ω |

Typical ESD Level
HBM Class 2


| Orderable Part Number | Package Type | Form | Minimum Order Quantity |
|-----------------------|-------------------|-------------|------------------------|
| AOCR32326 | RigidCSP™ 6x2.5_8 | Tape & Reel | 3000 |

Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

| Parameter | Symbol | Rating | Units |
|---|----------------|------------|------------------|
| Source-Source Voltage | V_{SS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Source Current (DC) ^{Note1} | I_S | 28 | A |
| Source Current (Pulse) ^{Note2} | I_{SM} | 130 | A |
| Power Dissipation ^{Note1} | P_D | 2.75 | W |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55 to 150 | $^\circ\text{C}$ |

Thermal Characteristics

| Parameter | Symbol | Typical | Units |
|---|-----------------|---------|--------------------|
| Maximum Junction-to-Ambient $t \leq 10\text{s}$ | $R_{\theta JA}$ | 35 | $^\circ\text{C/W}$ |
| Maximum Junction-to-Ambient Steady-State | | 45 | $^\circ\text{C/W}$ |

Note 1. I_S rated value is based on bare silicon. Mounted on 70mmx70mm FR-4 board.

Note 2. PW < 10 μs pulses, duty cycle 1% max.

Electrical Characteristics (T_J=25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|-----------------------------|---------------------------------------|--|-----|------|--------|-------|
| STATIC PARAMETERS | | | | | | |
| BV _{SSS} | Source-Source Breakdown Voltage | I _S =250μA, V _{GS} =0V Test Circuit 6 | 30 | | | V |
| I _{SSS} | Zero Gate Voltage Source Current | V _{SS} =30V, V _{GS} =0V Test Circuit 1 T _J =55°C | | | 1 5 | μA |
| I _{GSS} | Gate leakage current | V _{SS} =0V, V _{GS} =±20V Test Circuit 2 | | | ±100 | nA |
| V _{GS(th)} | Gate Threshold Voltage | V _{SS} =V _{GS} , I _S =250μA Test Circuit 3 | 1.3 | 1.8 | 2.3 | V |
| R _{SS(ON)} | Static Source to Source On-Resistance | V _{GS} =10V, I _S =10A Test Circuit 4 | 1.4 | 2.1 | 2.6 | mΩ |
| | | T _J =125°C | | 3.1 | 3.8 | |
| | | V _{GS} =8V, I _S =10A Test Circuit 4 | 1.5 | 2.2 | 2.9 | mΩ |
| | | V _{GS} =4.5V, I _S =10A Test Circuit 4 | 2 | 2.9 | 4.2 | mΩ |
| g _{FS} | Forward Transconductance | V _{SS} =5V, I _S =10A Test Circuit 3 | | 80 | | S |
| V _{FSS} | Forward Source to Source Voltage | I _S =1A, V _{GS} =0V Test Circuit 5 | | 0.72 | 1 | V |
| DYNAMIC PARAMETERS | | | | | | |
| R _g | Gate resistance | f=1MHz | | 1.0 | | Ω |
| SWITCHING PARAMETERS | | | | | | |
| Q _g | Total Gate Charge | V _{G1S1} =10V, V _{SS} =15V, I _S =10A | | 142 | | nC |
| t _{D(on)} | Turn-On DelayTime | V _{G1S1} =10V, V _{SS} =15V, R _L =1.5Ω, R _{GEN} =3Ω Test Circuit8 | | 20 | | ns |
| t _r | Turn-On Rise Time | | | 80 | | ns |
| t _{D(off)} | Turn-Off DelayTime | | | 85 | | ns |
| t _f | Turn-Off Fall Time | | | 48 | | ns |

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

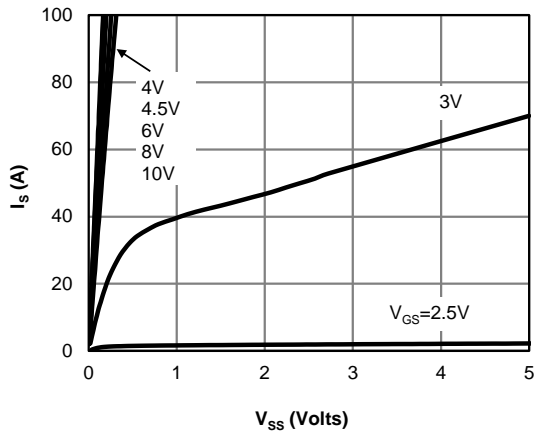


Figure 1: On-Region Characteristics

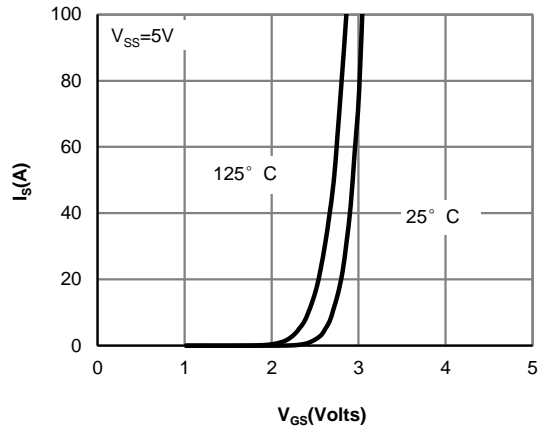


Figure 2: Transfer Characteristics

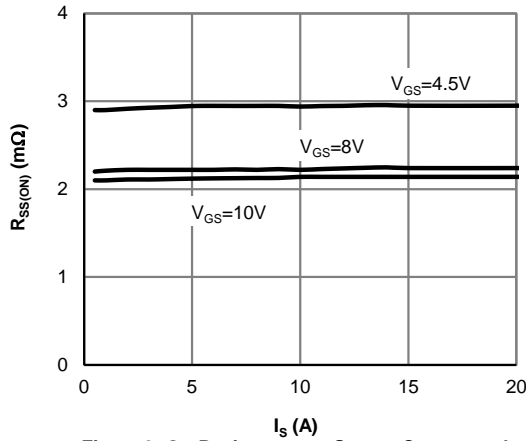


Figure 3: On-Resistance vs. Source Current and Gate Voltage

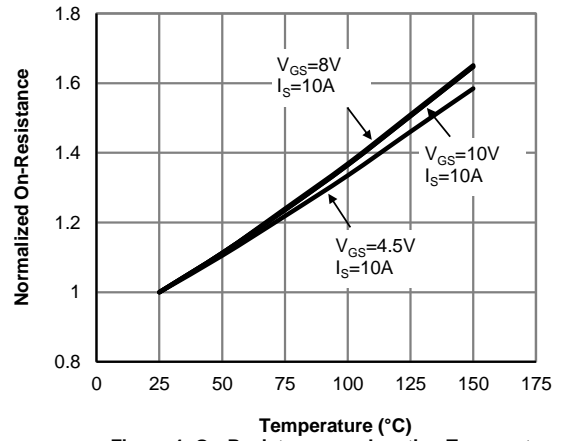


Figure 4: On-Resistance vs. Junction Temperature

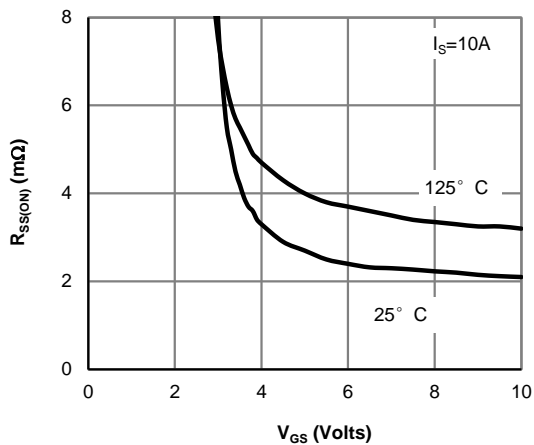


Figure 5: On-Resistance vs. Gate-Source Voltage

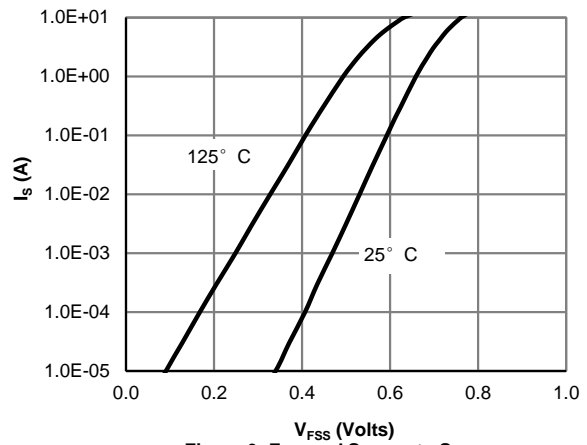


Figure 6: Forward Source to Source Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

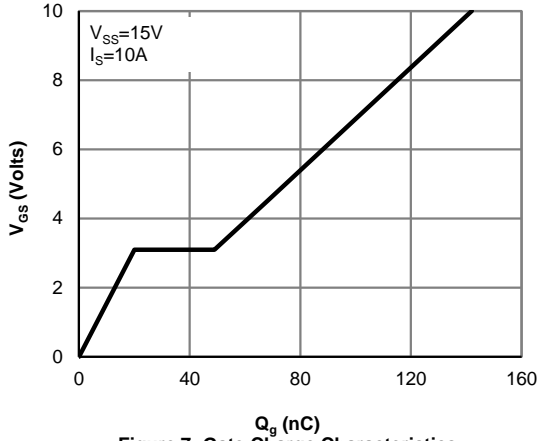


Figure 7: Gate-Charge Characteristics

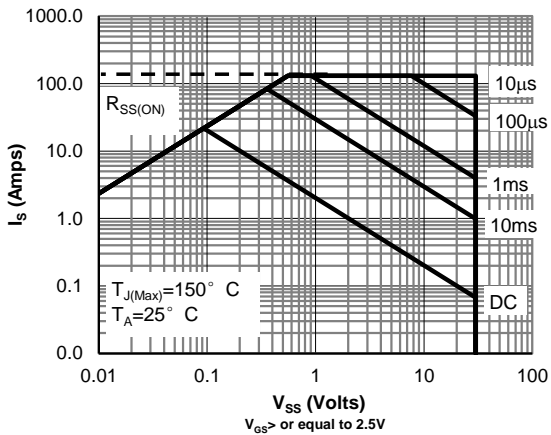


Figure 8: Maximum Forward Biased Safe Operating Area (Note1)

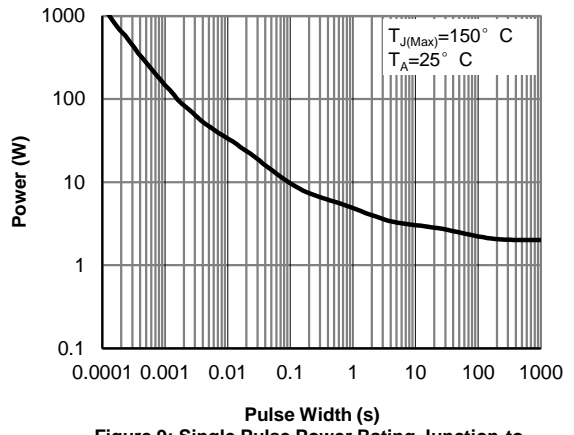


Figure 9: Single Pulse Power Rating Junction-to-Ambient (Note1)

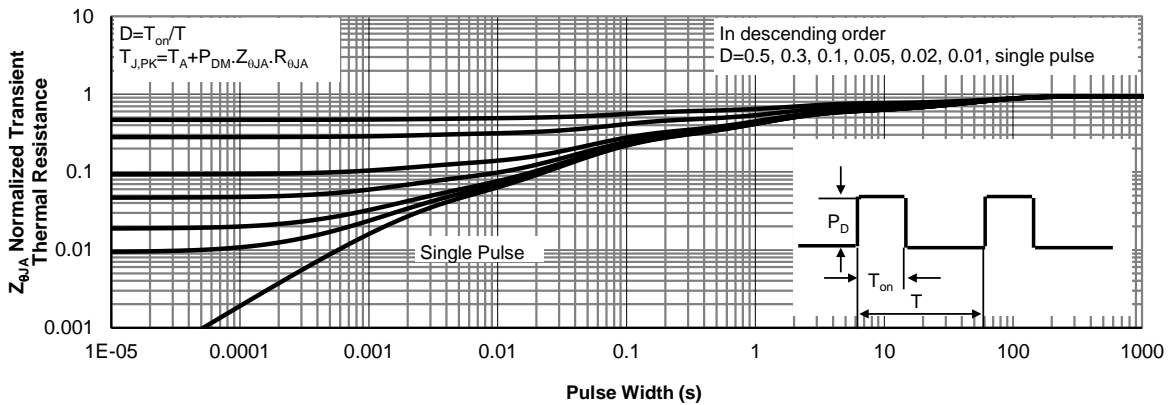
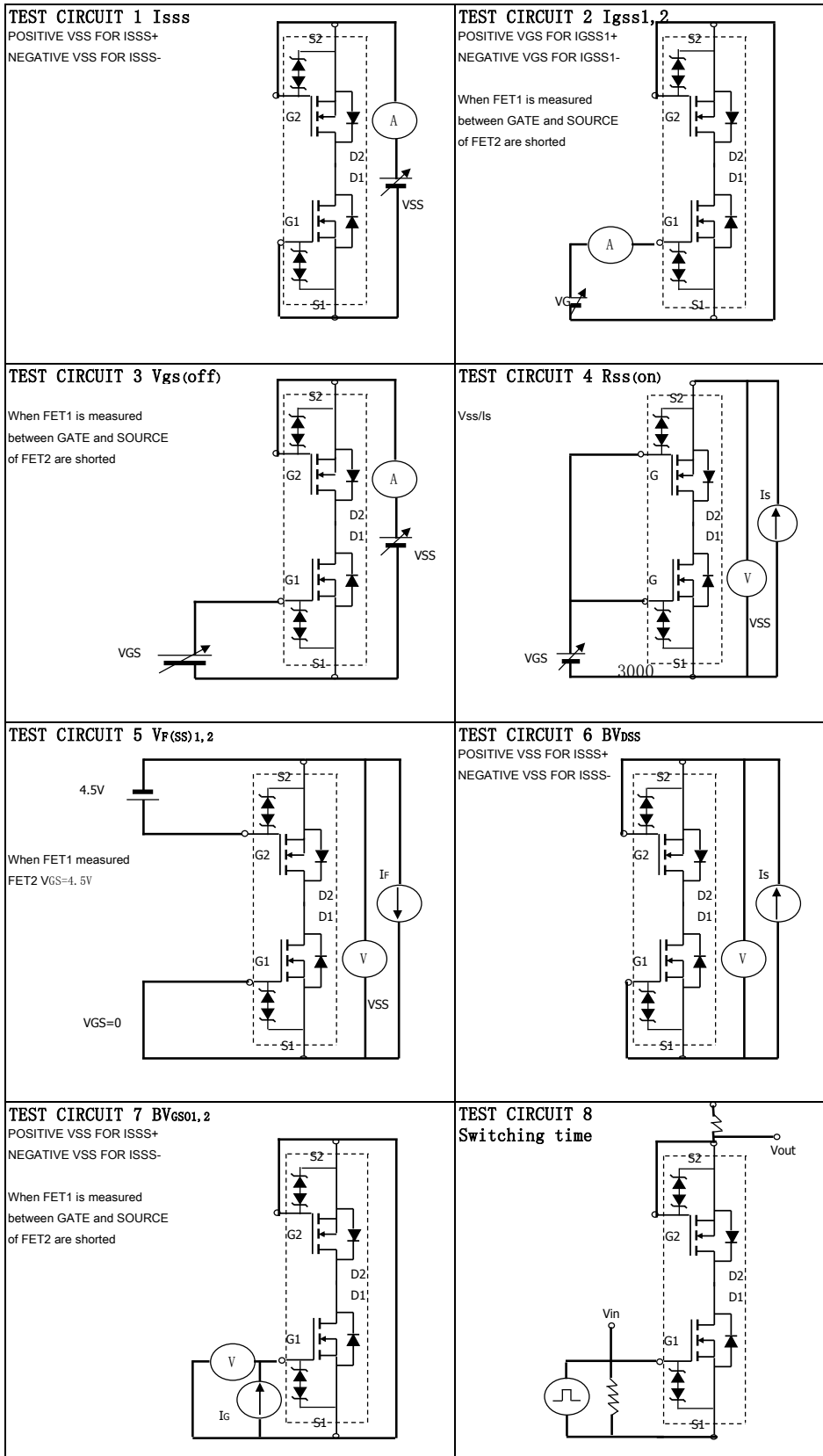
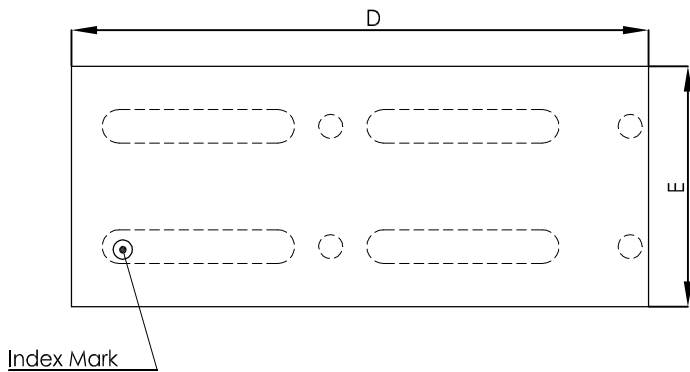


Figure 10: Normalized Maximum Transient Thermal Impedance (Note1)

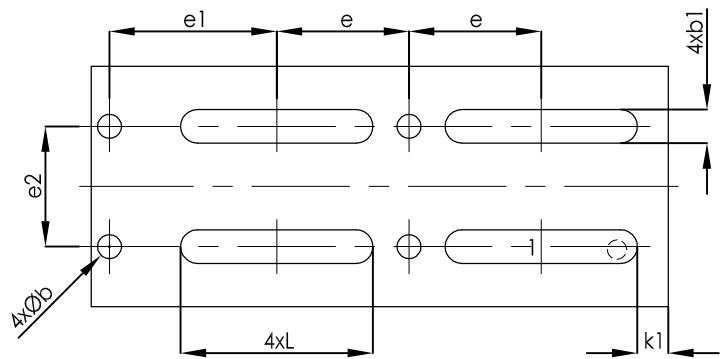




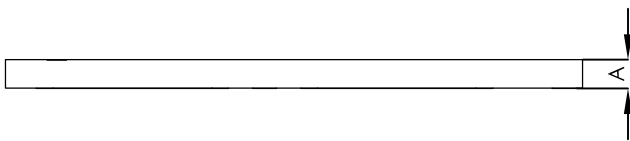
RigidCSP6x2.5_8 PACKAGE OUTLINE



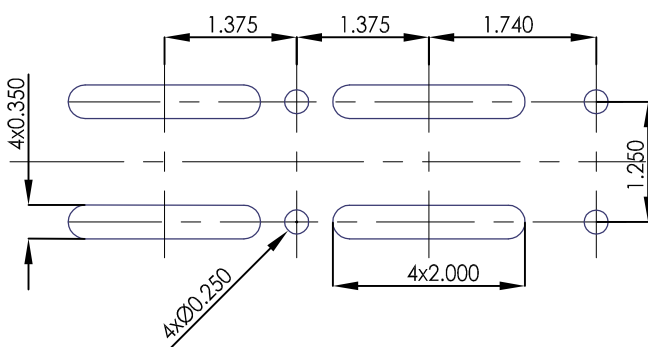
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN

| SYMBOLS | DIM. IN MM | | | DIM. IN INCH | | |
|---------|------------|-------|-------|--------------|-------|-------|
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A | 0.270 | 0.300 | 0.330 | --- | 0.012 | 0.013 |
| b | 0.220 | 0.250 | 0.280 | 0.009 | 0.010 | 0.011 |
| b1 | 0.320 | 0.350 | 0.380 | 0.013 | 0.014 | 0.015 |
| D | 5.970 | 6.000 | 6.030 | 0.235 | 0.236 | 0.237 |
| E | 2.470 | 2.500 | 2.530 | 0.097 | 0.098 | 0.100 |
| e | 1.375BSC. | | | 0.054BSC. | | |
| e1 | 1.740BSC. | | | 0.069BSC. | | |
| e2 | 1.250BSC. | | | 0.049BSC. | | |
| K1 | --- | 0.320 | --- | --- | 0.013 | --- |
| L | 1.970 | 2.000 | 2.030 | 0.078 | 0.079 | 0.080 |

NOTE:

1. CONTROLLED DIMENSIONS ARE IN MILLIMETERS.
2. TOP VIEW IS THE VIEW OF TOP SURFACE OF THE PART HAVING INDEX AND PART NUMBER MARKING.