



Dual N-Channel Enhancement Mode Field Effect Transistor

| PRODUCT SUMMARY | | |
|-----------------|----------------|------------------------------|
| V _{DS} | I _D | R _{DS(ON)} (mΩ) Max |
| 24V | 10A | 14.0 @ V _{GS} =4.5V |
| | | 15.0 @ V _{GS} =4.0V |
| | | 16.0 @ V _{GS} =3.7V |
| | | 17.5 @ V _{GS} =3.1V |
| | | 21.0 @ V _{GS} =2.5V |

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

| Symbol | Parameter | Limit | Units |
|-----------------------------------|--|----------------------|-------|
| V _{DS} | Drain-Source Voltage | 24 | V |
| V _{GS} | Gate-Source Voltage | ±12 | V |
| I _D | Drain Current-Continuous ^{a d} | T _A =25°C | 10 |
| | | T _A =70°C | 8 |
| I _{DM} | -Pulsed ^d | 60 | A |
| E _{AS} | Single Pulse Avalanche Energy ^c | 56 | mJ |
| P _D | Maximum Power Dissipation ^a | T _A =25°C | 1.32 |
| | | T _A =70°C | 0.84 |
| T _J , T _{STG} | Operating Junction and Storage Temperature Range | -55 to 150 | °C |

THERMAL CHARACTERISTICS

| | | | |
|------------------|--|----|------|
| R _{θJA} | Thermal Resistance, Junction-to-Ambient ^a | 95 | °C/W |
|------------------|--|----|------|

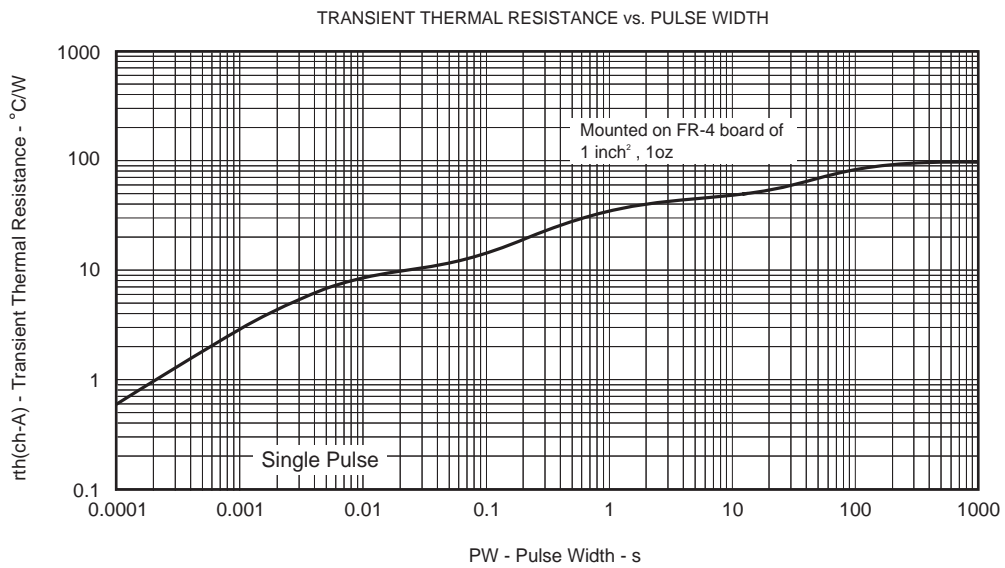
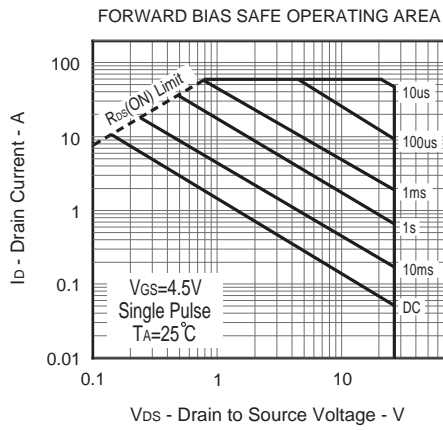
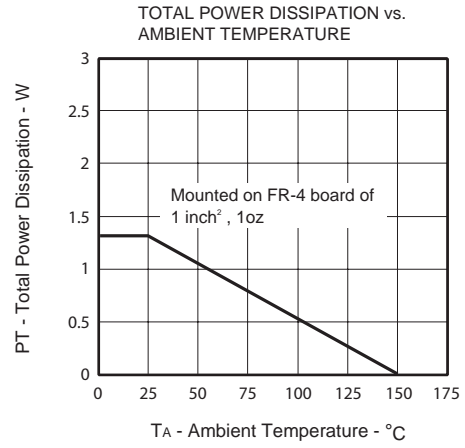
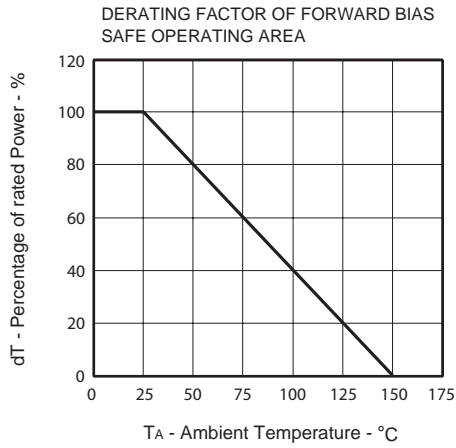
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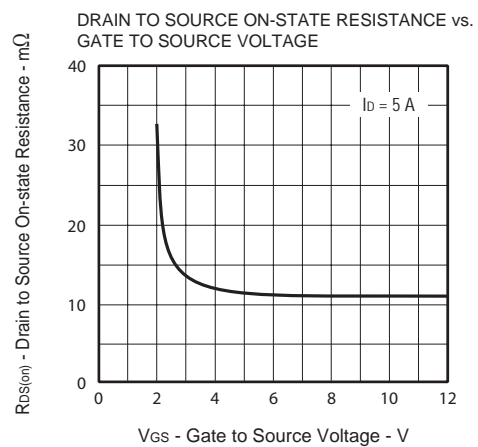
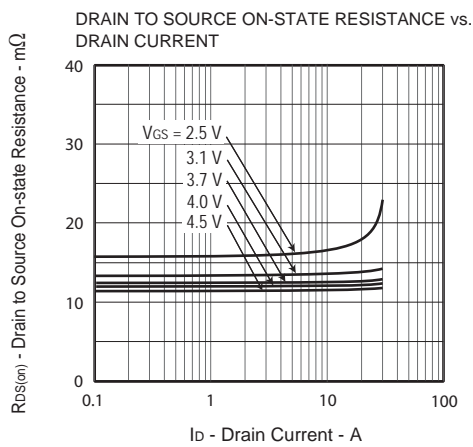
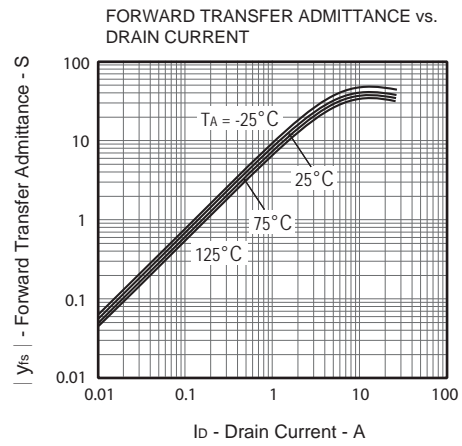
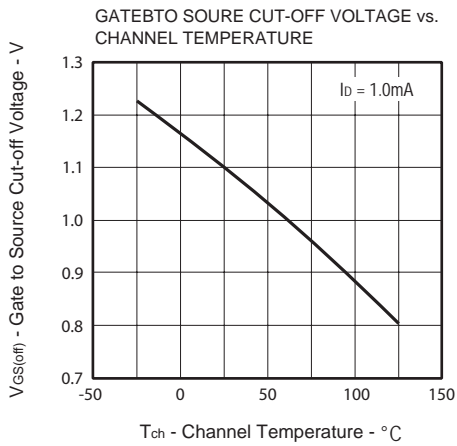
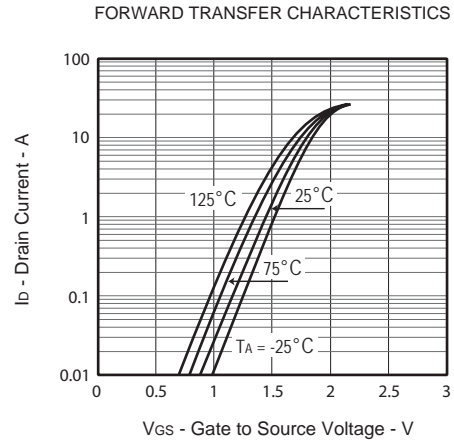
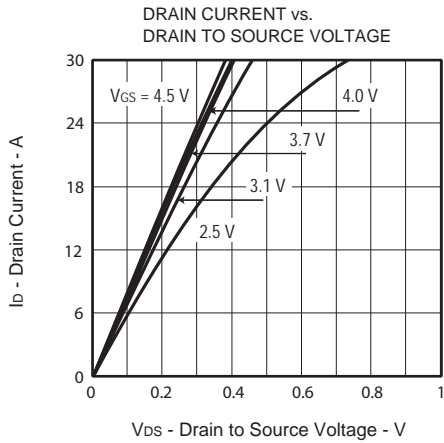
Ver 3.7

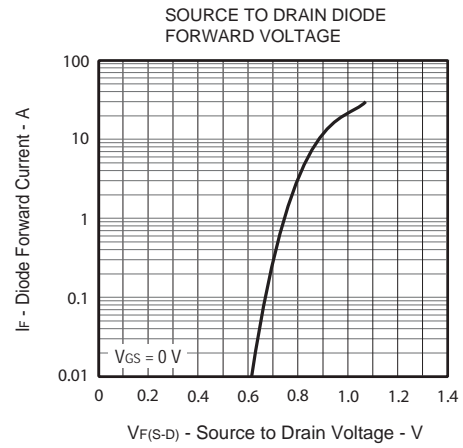
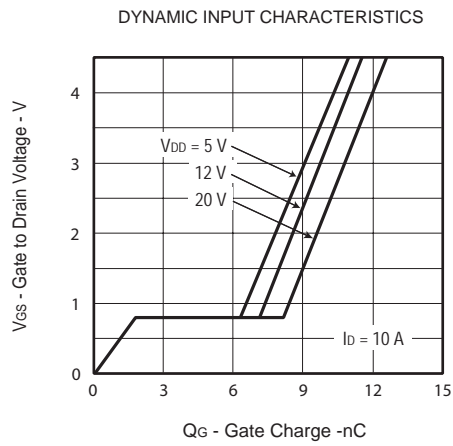
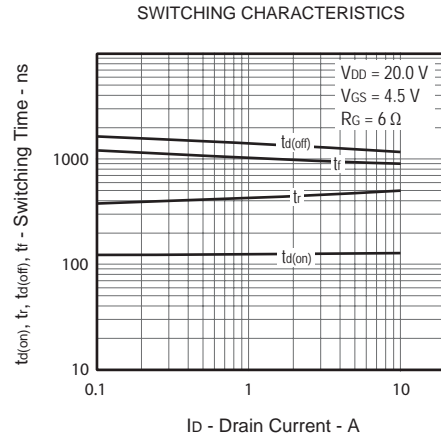
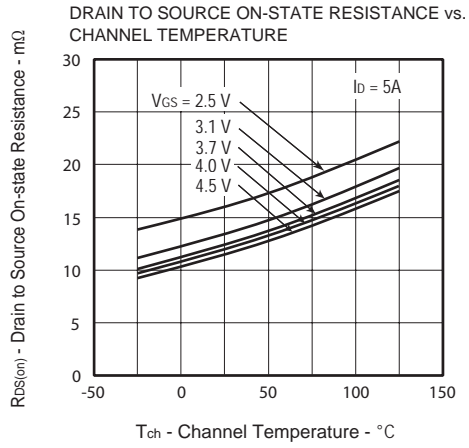
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|--|----------------------------------|---|------|------|------|-------|
| OFF CHARACTERISTICS | | | | | | |
| BV _{bss} | Drain-Source Breakdown Voltage | V _{GS} =0V , I _D =250uA | 24 | | | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =20V , V _{GS} =0V | | | 1 | uA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} = ±8V , V _{DS} =0V | | | ±1 | uA |
| ON CHARACTERISTICS | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =1mA | 0.5 | 1.1 | 1.5 | V |
| R _{DS(ON)} | Drain-Source On-State Resistance | V _{GS} =4.5V , I _D =5A | 8.0 | 11.5 | 14.0 | m ohm |
| | | V _{GS} =4.0V , I _D =5A | 8.5 | 12.0 | 15.0 | m ohm |
| | | V _{GS} =3.7V , I _D =5A | 9.0 | 12.5 | 16.0 | m ohm |
| | | V _{GS} =3.1V , I _D =5A | 9.5 | 13.5 | 17.5 | m ohm |
| | | V _{GS} =2.5V , I _D =5A | 11.0 | 16.0 | 21.0 | m ohm |
| g _{FS} | Forward Transconductance | V _{DS} =10V , I _D =5A | | 28 | | S |
| SWITCHING CHARACTERISTICS^b | | | | | | |
| t _{D(ON)} | Turn-On Delay Time | V _{DD} =20V I _D =5A V _{GS} =4.5V R _{GEN} = 6 ohm | | 122 | | ns |
| t _r | Rise Time | | | 463 | | ns |
| t _{D(OFF)} | Turn-Off Delay Time | | | 1200 | | ns |
| t _f | Fall Time | | | 920 | | ns |
| Q _g | Total Gate Charge | | | 12.5 | | nC |
| Q _{gs} | Gate-Source Charge | V _{DS} =20V, I _D =10A, V _{GS} =4.5V | | 1.7 | | nC |
| Q _{gd} | Gate-Drain Charge | | | 6.5 | | nC |
| DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS | | | | | | |
| V _{SD} | Diode Forward Voltage | V _{GS} =0V, I _S =10A | | 0.85 | 1.2 | V |
| Notes | | | | | | |
| a.Surface Mounted on FR4 Board of 1 inch ² , 1oz. | | | | | | |
| b.Guaranteed by design, not subject to production testing. | | | | | | |
| c.Starting T _J =25°C, L=0.5mH, V _{DD} = 10V. | | | | | | |
| d.Drain current limited by maximum junction temperature. | | | | | | |

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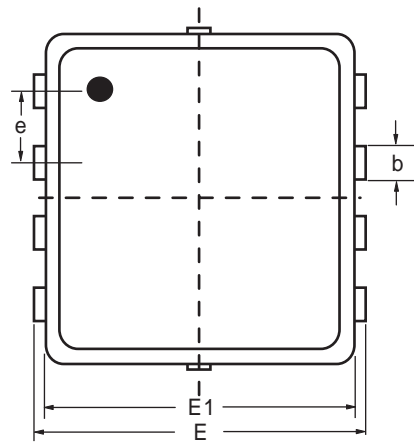




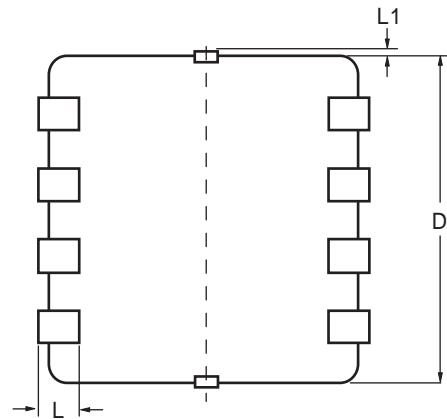


PACKAGE OUTLINE DIMENSIONS

S mini 8



TOP VIEW



BOTTOM VIEW



SIDE VIEW

| SYMBOLS | MILLIMETERS | | |
|---------|-------------|-------|-------|
| | MIN | NOM | MAX |
| A | 0.700 | 0.800 | 0.900 |
| A1 | 0.000 | — | 0.050 |
| b | 0.240 | 0.300 | 0.350 |
| c | 0.080 | 0.152 | 0.250 |
| D | 2.800 | 2.900 | 3.000 |
| E | 2.700 | 2.800 | 2.900 |
| E1 | 2.200 | 2.300 | 2.400 |
| e | 0.650 BSC | | |
| L | 0.200 | 0.375 | 0.450 |
| L1 | 0.000 | — | 0.100 |
| θ1 | 0° | 10° | 12° |

TOP MARKING DEFINITION

