



N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

| V _{DSS} | I _D | R _{DS(ON)} (mΩ) Typ |
|------------------|----------------|------------------------------|
| 30V | 24A | 6.0 @ V _{GS} =10V |
| | | 7.2 @ V _{GS} =6V |

FEATURES

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



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

| Symbol | Parameter | Limit | Units |
|-----------------------------------|--|------------|-------|
| V _{DS} | Drain-Source Voltage | 30 | V |
| V _{GS} | Gate-Source Voltage | ±20 | V |
| I _D | Drain Current-Continuous | 24 | A |
| I _{DM} | -Pulsed ^a | 72 | A |
| P _D | Maximum Power Dissipation | 1.67 | W |
| T _J , T _{STG} | Operating Junction and Storage Temperature Range | -55 to 150 | °C |

THERMAL CHARACTERISTICS

| | | | |
|------------------|---|----|------|
| R _{θJA} | Thermal Resistance, Junction-to-Ambient | 75 | °C/W |
|------------------|---|----|------|

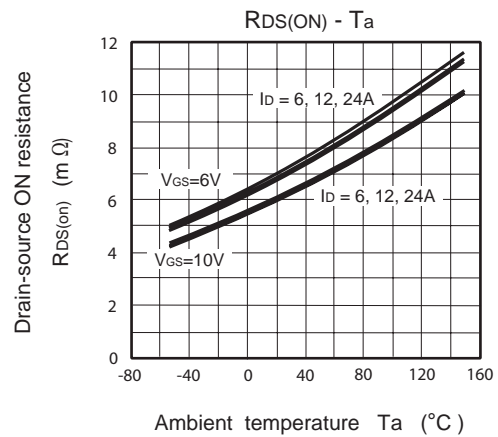
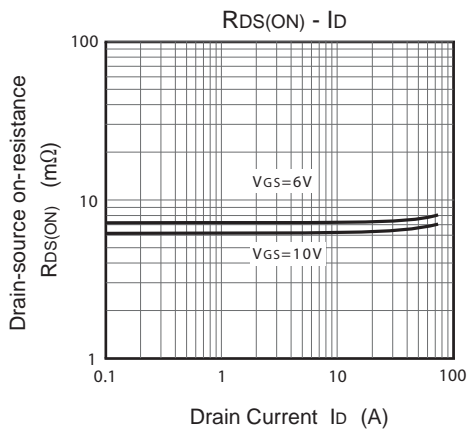
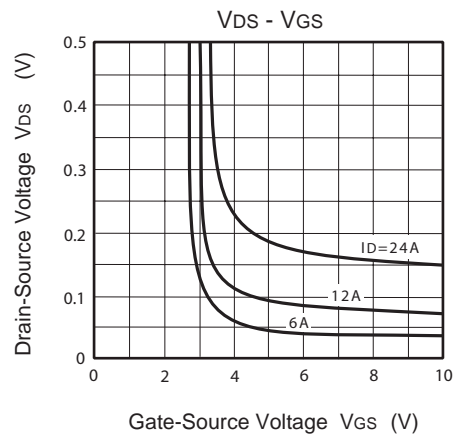
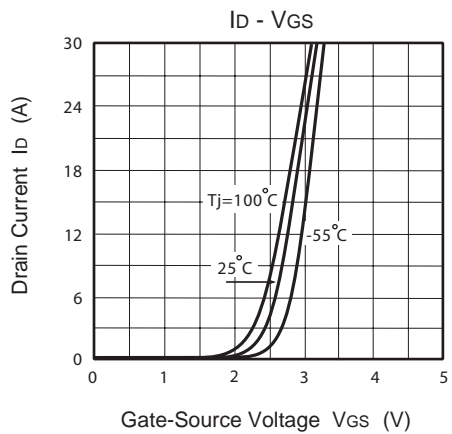
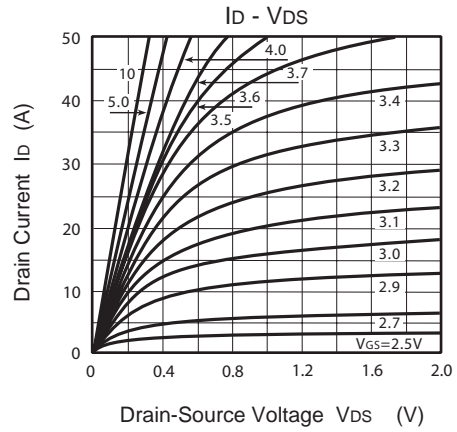
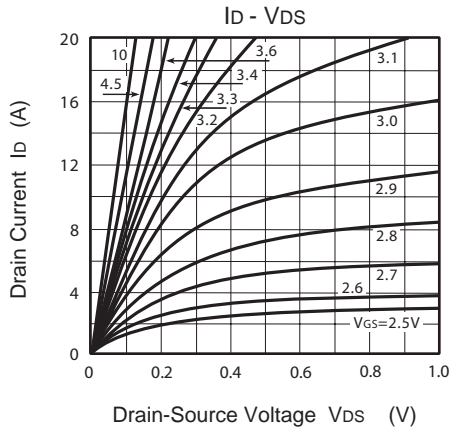
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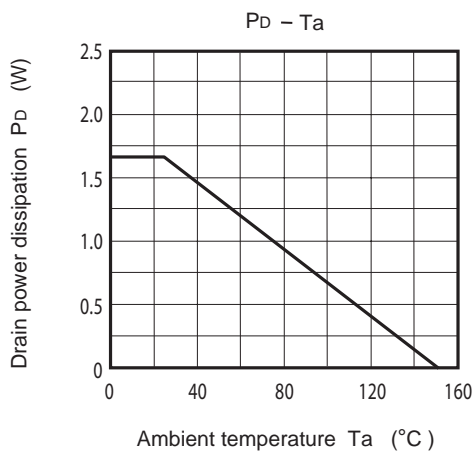
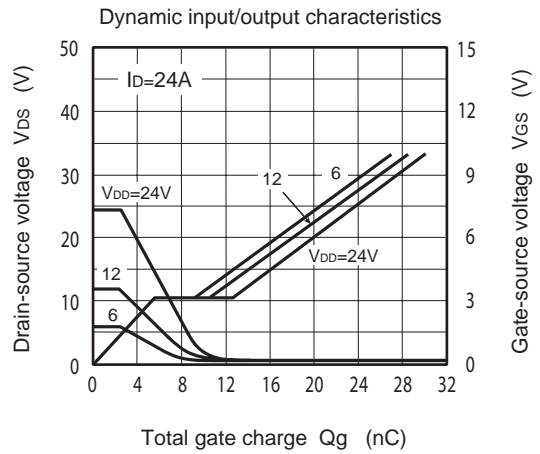
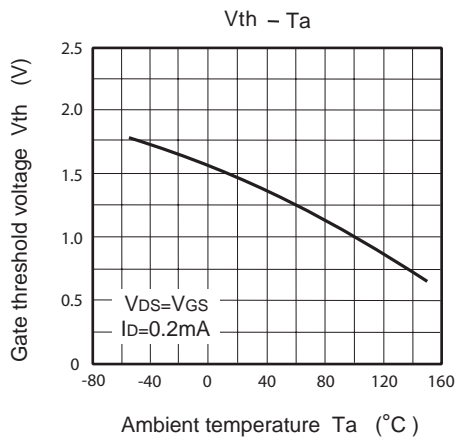
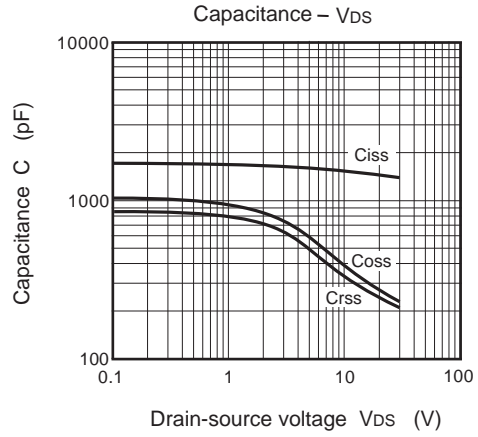
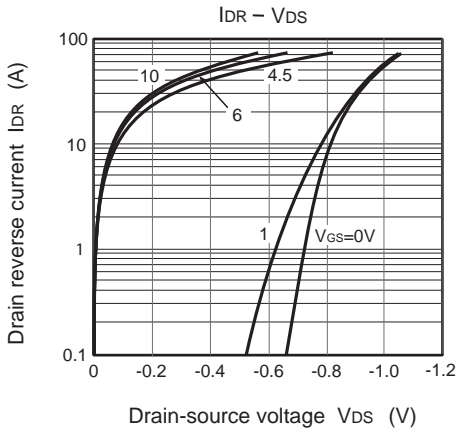
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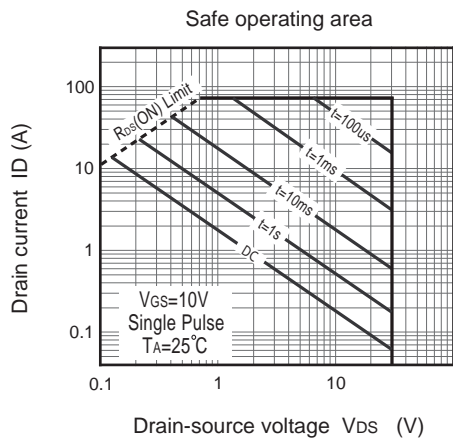
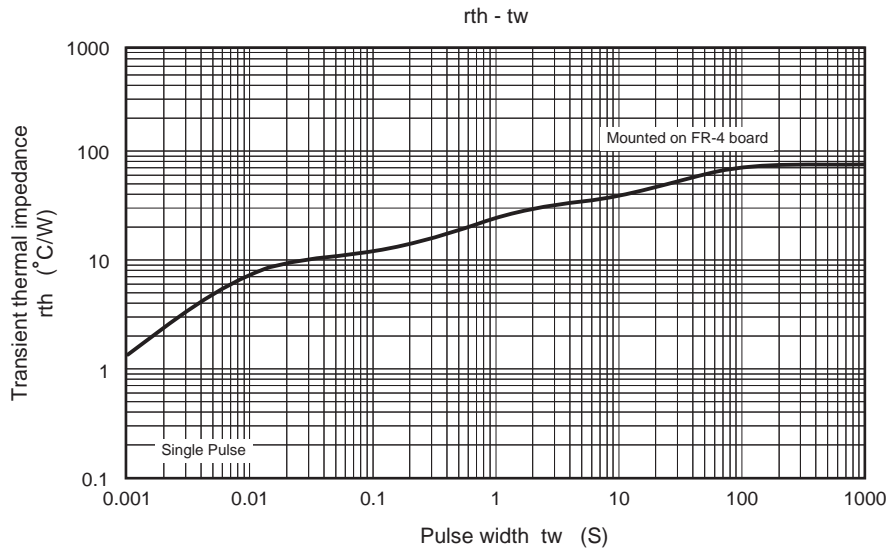
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|----------------------------------|---|-----|------|------|-------|
| OFF CHARACTERISTICS | | | | | | |
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =10mA | 30 | | | V |
| BV _{DSX} | | V _{GS} =-20V, I _D =10mA | 10 | | | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =30V, V _{GS} =0V | | | 10 | uA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} = ±16V, V _{DS} =0V | | | ±100 | nA |
| ON CHARACTERISTICS | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =0.2mA | 1 | 1.5 | 3 | V |
| R _{DS(ON)} | Drain-Source On-State Resistance | V _{GS} =10V, I _D =12A | | 6 | 7.2 | m ohm |
| | | V _{GS} =6V, I _D =12A | | 7.2 | 11 | m ohm |
| DYNAMIC CHARACTERISTICS^b | | | | | | |
| C _{ISS} | Input Capacitance | V _{DS} =10V, V _{GS} =0V f=1.0MHz | | 1670 | | pF |
| C _{OSS} | Output Capacitance | | | 382 | | pF |
| C _{RSS} | Reverse Transfer Capacitance | | | 333 | | pF |
| SWITCHING CHARACTERISTICS^b | | | | | | |
| t _{D(ON)} | Turn-On Delay Time | V _{DD} =15V I _D =12A V _{GS} =10V R _{GEN} = 4.7 ohm | | 29 | | ns |
| t _r | Rise Time | | | 35 | | ns |
| t _{D(OFF)} | Turn-Off Delay Time | | | 68 | | ns |
| t _f | Fall Time | | | 17 | | ns |
| Q _g | Total Gate Charge | V _{DS} =24V, I _D =12A, V _{GS} =10V | | 31 | | nC |
| Q _{gs} | Gate-Source Charge | V _{DS} =24V, I _D =12A, V _{GS} =10V | | 2.5 | | nC |
| Q _{gd} | Gate-Drain Charge | | | 10 | | nC |
| DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS | | | | | | |
| V _{SD} | Diode Forward Voltage | V _{GS} =0V, I _S =24A | | 0.86 | 1.3 | V |
| Notes | | | | | | |
| a.Pulse Test:Pulse Width < 300us, Duty Cycle < 2%. | | | | | | |
| b.Guaranteed by design, not subject to production testing. | | | | | | |

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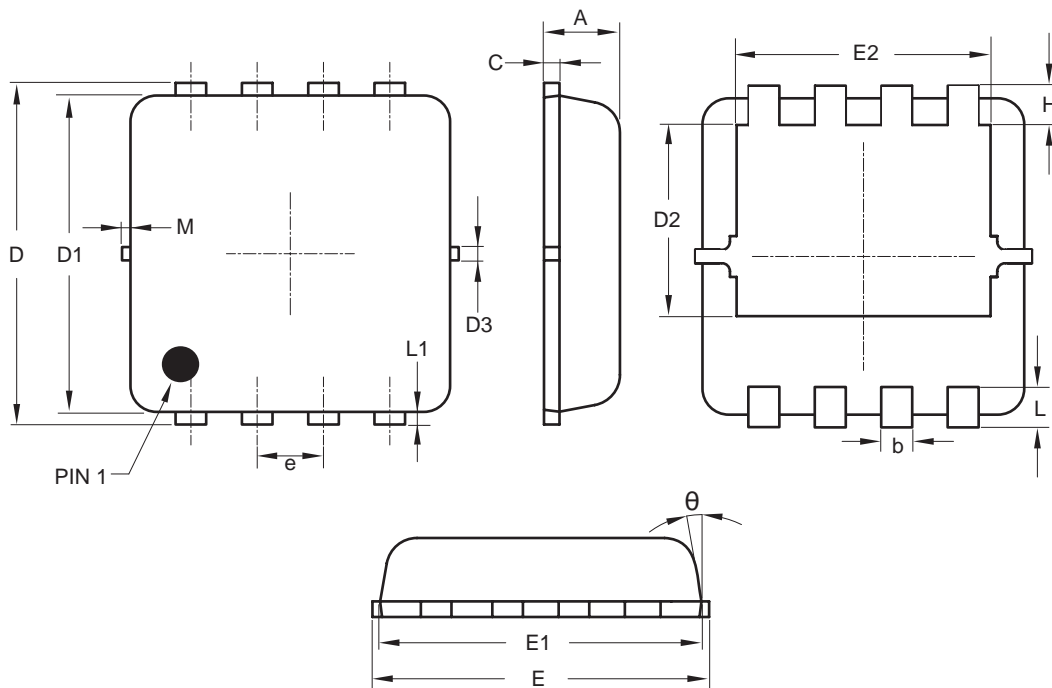






PACKAGE OUTLINE DIMENSIONS

TSON 3.3 x 3.3



| SYMBOLS | MILLIMETERS | | |
|---------|-------------|------|------|
| | MIN. | NOM. | MAX. |
| A | 0.70 | 0.75 | 0.80 |
| b | 0.25 | 0.30 | 0.35 |
| C | 0.10 | 0.15 | 0.25 |
| D | 3.25 | 3.35 | 3.45 |
| D1 | 3.00 | 3.10 | 3.20 |
| D2 | 1.78 | 1.88 | 1.98 |
| D3 | — | 0.13 | — |
| E | 3.20 | 3.30 | 3.40 |
| E1 | 3.00 | 3.15 | 3.20 |
| E2 | 2.39 | 2.49 | 2.59 |
| e | 0.65 BSC | | |
| H | 0.30 | 0.39 | 0.50 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | — | 0.13 | — |
| M | — | — | 0.15 |
| θ | — | 10° | 12° |