



General Features

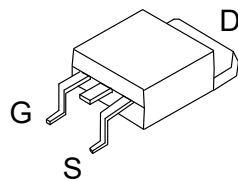
- Split gate trench MOSFET technology
- Low RDS(on) & FOM
- Extremely low switching loss
- Excellent stability and uniformity

Application

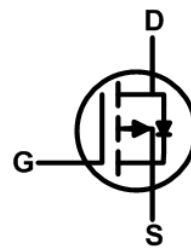
- Power management
- Portable equipment

Product Summary

| | | |
|------------------------------------|------|------------|
| V_{DS} | -100 | V |
| $R_{DS(on), Typ @ V_{GS} = -10 V}$ | 75 | m Ω |
| I_D | -20 | A |



TO-252



P-channel

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

| Parameter | | Symbol | Limit | Unit |
|--|---------------------------|----------------|------------|------------------|
| Drain-source Voltage | | V_{DS} | -100 | V |
| Gate-source Voltage | | V_{GS} | ± 20 | V |
| Drain Current | $T_c = 25^\circ\text{C}$ | I_D | -20 | A |
| | $T_c = 100^\circ\text{C}$ | | -14 | |
| Pulsed Drain Current ^A | | I_{DM} | -80 | A |
| Avalanche energy ^B | | E_{AS} | 100 | mJ |
| Total Power Dissipation | $T_c = 25^\circ\text{C}$ | P_D | 72 | W |
| | $T_c = 100^\circ\text{C}$ | | 28.8 | |
| Junction and Storage Temperature Range | | T_J, T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

Thermal resistance

| Parameter | | Symbol | Typ | Max | Units |
|---|---------------------|-----------------|------|-----|--------------------|
| Thermal Resistance Junction-to-Ambient ^D | $t \leq 10\text{S}$ | $R_{\theta JA}$ | 15 | 20 | $^\circ\text{C/W}$ |
| Thermal Resistance Junction-to-Ambient ^D | Steady-State | | 40 | 50 | |
| Thermal Resistance Junction-to-Case | Steady-State | $R_{\theta JC}$ | 1.35 | 1.7 | |

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

| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---------------------------------------|-----------------------|--|-----------------------|------|------|-------|
| Static Parameter | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D =-250μA | -100 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-100V, V _{GS} =0V | T _J =25°C | | -1 | μA |
| | | | T _J =55°C | | -5 | |
| | | | T _J =125°C | | -10 | |
| Gate-Body Leakage Current | I _{GSS} | V _{GS} = ±20V, V _{DS} =0V | | | ±100 | nA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D =-250μA | -1.0 | -1.8 | -2.5 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = -10V, I _D =-10A | | 75 | 95 | mΩ |
| | | V _{GS} = -4.5V, I _D =-5A | | 85 | 110 | |
| Diode Forward Voltage | V _{SD} | I _S =-10A, V _{GS} =0V | | | -1.3 | V |
| Maximum Body-Diode Continuous Current | I _S | | | | -20 | A |
| Dynamic Parameters | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =-50V, V _{GS} =0V, f=1MHZ | | 1051 | | pF |
| Output Capacitance | C _{oss} | | | 119 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 25 | | |
| Switching Parameters | | | | | | |
| Total Gate Charge | Q _{g(-10V)} | V _{GS} =-10V, V _{DS} =-50V, I _D =-5A | | 20.1 | | nC |
| Total Gate Charge | Q _{g(-4.5V)} | | | 9.7 | | |
| Gate-Source Charge | Q _{gs} | | | 3.9 | | |
| Gate-Drain Charge | Q _{gd} | | | 4.3 | | |
| Reverse Recovery Charge | Q _{rr} | I _F =-5A, di/dt=100A/us | | 140 | | ns |
| Reverse Recovery Time | t _{rr} | | | 70 | | |
| Turn-on Delay Time | t _{D(on)} | V _{GS} =-10V, V _{DD} =-50V, R _L =2.5Ω R _{GEN} =6Ω | | 10 | | ns |
| Turn-on Rise Time | t _r | | | 30 | | |
| Turn-off Delay Time | t _{D(off)} | | | 77 | | |
| Turn-off fall Time | t _f | | | 81 | | |

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

C. Pd is based on max. junction temperature, using junction-case thermal resistance.

D. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25° C. The Power dissipation PDSM is based on RθJA ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.



Typical Performance Characteristics

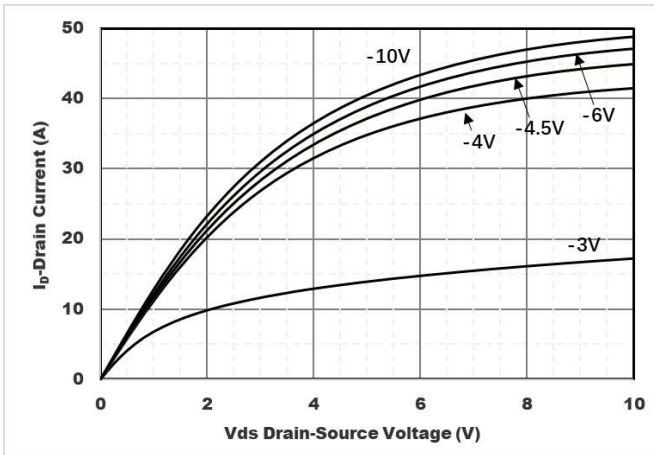


Figure1. Output Characteristics

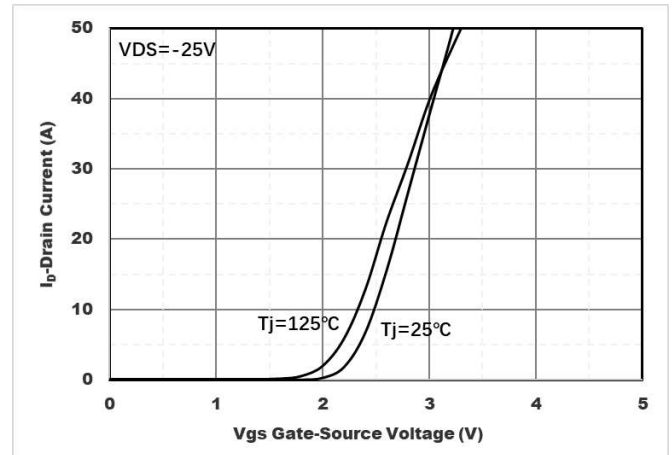


Figure2. Transfer Characteristics

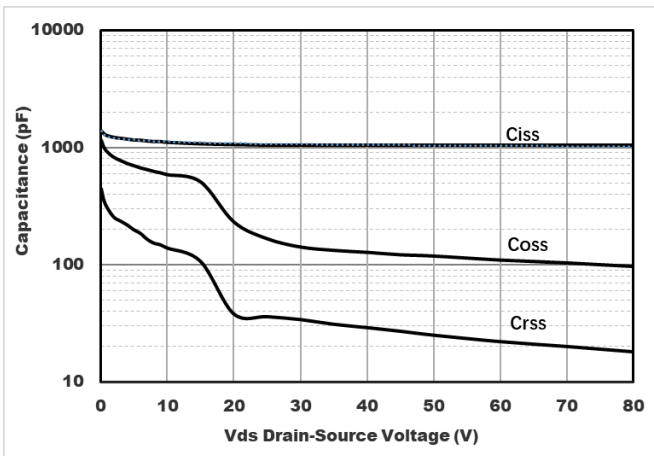


Figure3. Capacitance Characteristics

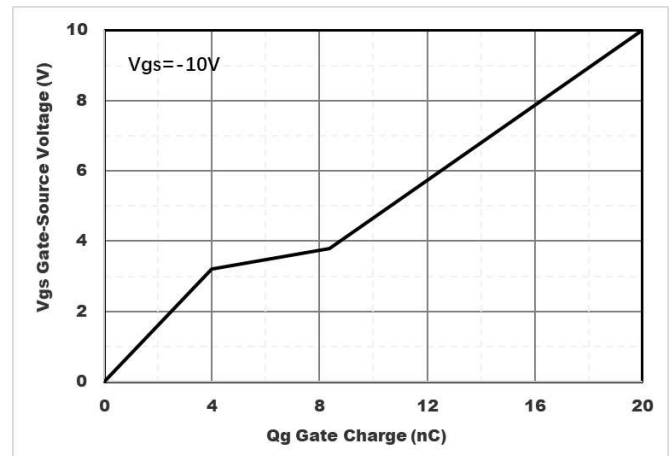


Figure4. Gate Charge

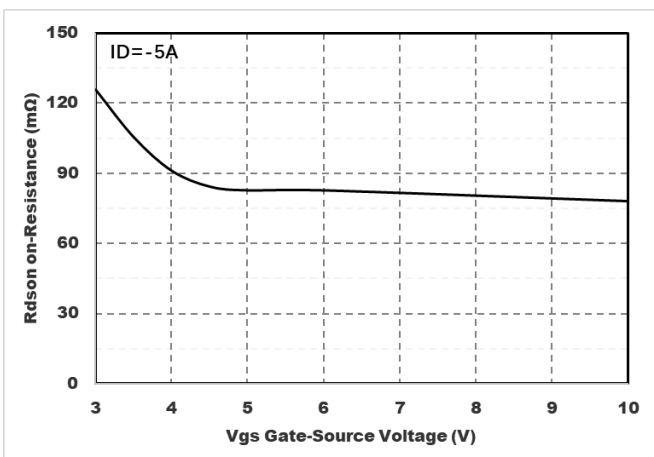


Figure5. : On-Resistance vs. Gate to Source Voltage

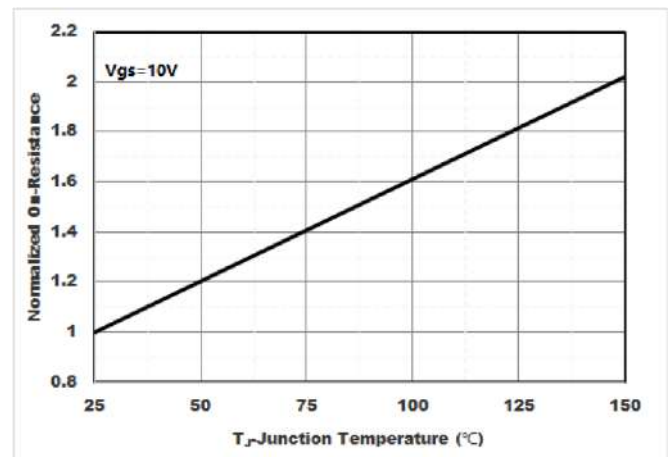


Figure6. Normalized On-Resistance

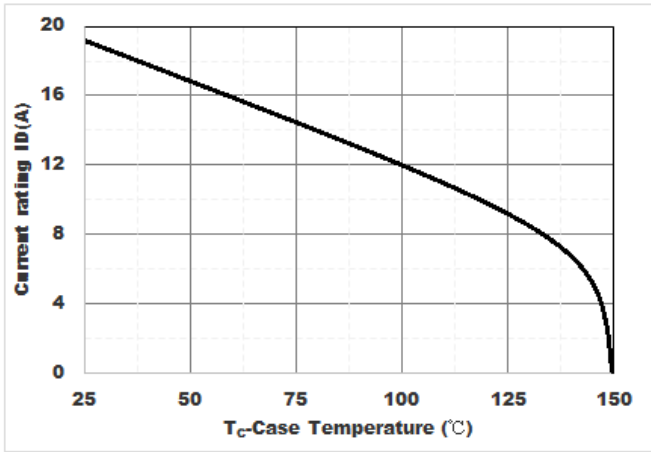


Figure7. Drain current

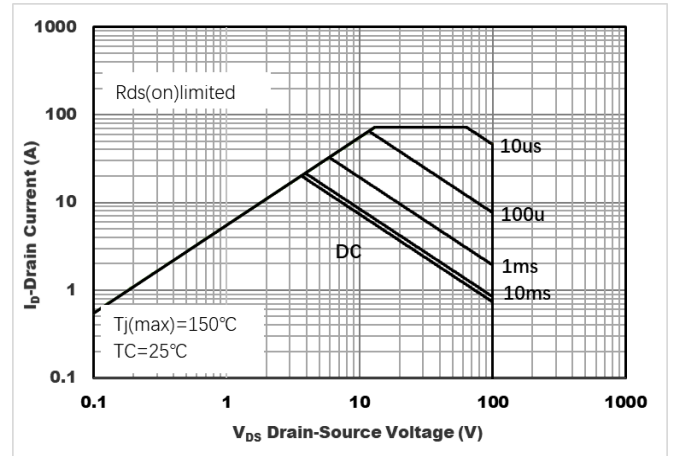


Figure8.Safe Operation Area

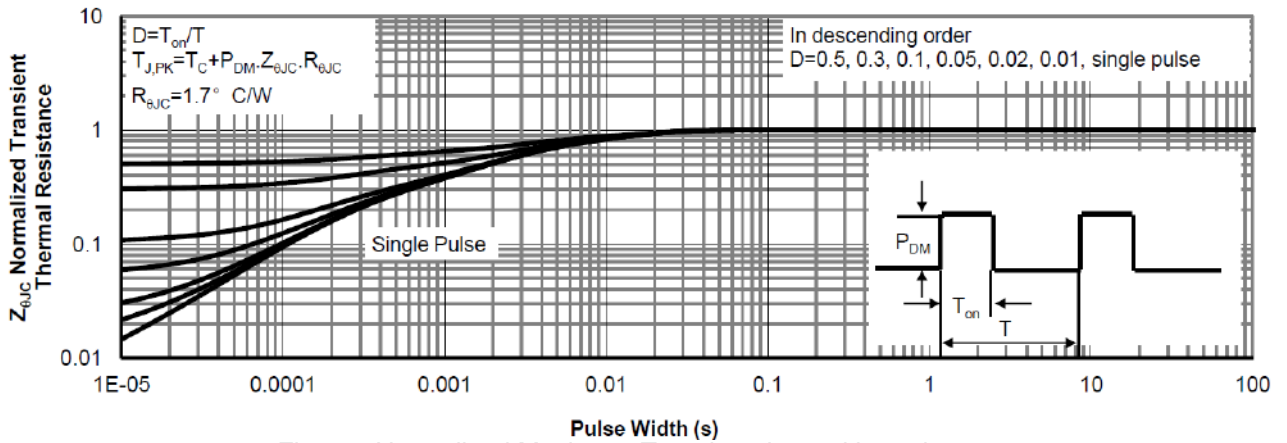
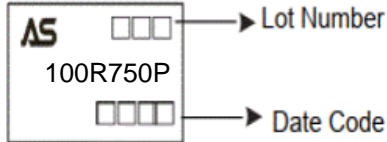


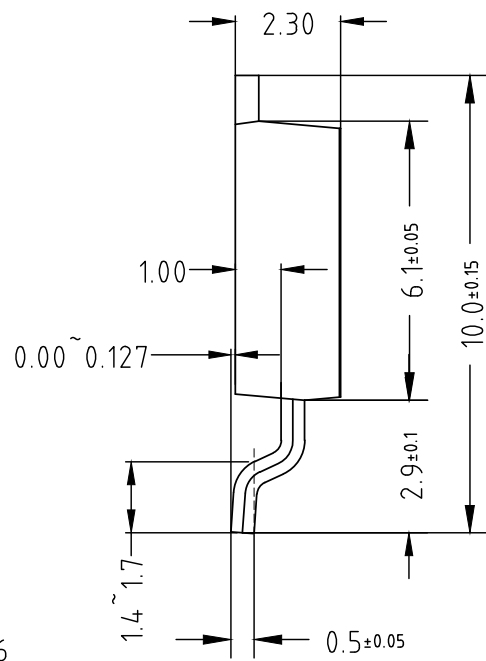
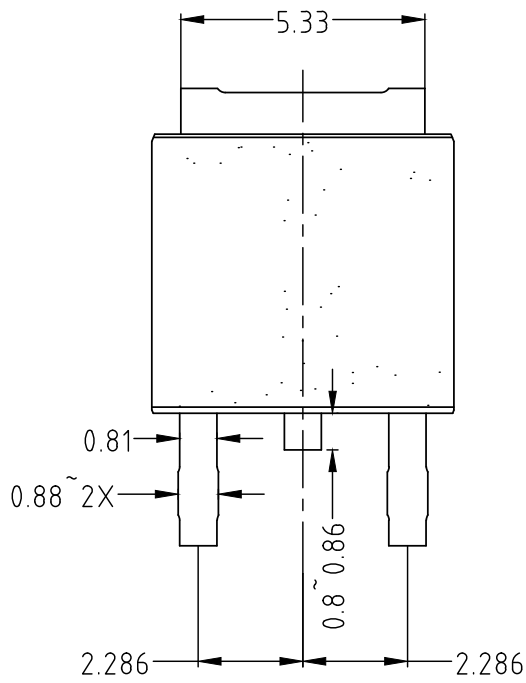
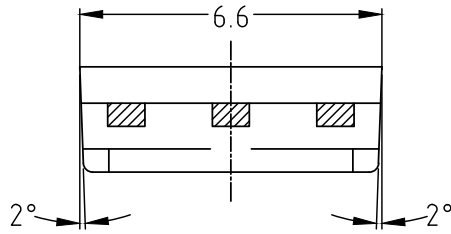
Figure9.Normalized Maximum Transient thermal impedance

Ordering and Marking Information

| Ordering Device No. | Marking | Package | Packing | Quantity |
|---------------------|----------|---------|-----------|-----------|
| ASDM100R750PKQ-R | 100R750P | TO-252 | Tape&Reel | 2500/Reel |

| PACKAGE | MARKING |
|---------|--|
| TO-252 |  <p>AS □□□ → Lot Number 100R750P □□□ → Date Code</p> |

TO-252



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