

SED3030M

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

This type used advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of application

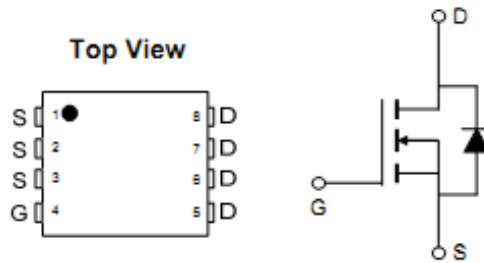
Features

For a single MOSFET

- $V_{DS} = 30V$
- $R_{DS(ON)} = 7.4m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



Absolute Maximum Ratings

| Parameter | | Symbol | Rating | Units |
|--------------------------------------|------------|----------|------------|-------|
| Drain-Source Voltage | | V_{DS} | 30 | V |
| Gate-Source Voltage | | V_{GS} | ± 20 | V |
| Drain Current | Continuous | I_D | 30 | A |
| | Pulsed | | 80 | |
| Total Power Dissipation | @TA=25°C | P_D | 40 | W |
| Single pulse avalanche energy | | E_{AS} | 72 | mJ |
| Operating Junction Temperature Range | | T_J | -55 to 175 | °C |

Thermal Resistance

| Symbol | Parameter | Typ | Max | Units |
|-----------------|-------------------------------------|-----|-----|-------|
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | - | 3 | °C/W |

SED3030M

| Electrical Characteristics (T _J =25°C unless otherwise noted) | | | | | | |
|--|-----------------------------------|--|-----|------|-----|-------|
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
| OFF CHARACTERISTICS (Note 2) | | | | | | |
| B _V DSS | Drain-Source Breakdown Voltage | I _D =250μA, V _{GS} =0 V | 30 | | | V |
| I _{DSS} | Drain to Source Leakage Current | V _{DS} =30V, V _{GS} =0V | | | 1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} =20V | | | 100 | nA |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250μA | 1 | | 1.7 | V |
| R _{DS(ON)} | Static Drain-Source On-Resistance | V _{GS} =10V, I _D =25A | - | 7.4 | 8.5 | mΩ |
| g _{FS} | Forward Transconductance | V _{DS} =60V, I _D =7.5A | 26 | | | S |
| DYNAMIC PARAMETERS | | | | | | |
| C _{iss} | Input Capacitance | V _{GS} =0V, V _{DS} =15V, f=1MHz | | 680 | | pF |
| C _{oss} | Output Capacitance | | | 102 | | pF |
| C _{rss} | Reverse Transfer Capacitance | | | 71 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Q _g | Total Gate Charge ² | V _{GS} =10V, V _{DS} =15V, I _D =20A | | 17.5 | | nC |
| Q _{gs} | Gate Source Charge | | | 43 | | nC |
| Q _{gd} | Gate Drain Charge | | | 4.1 | | nC |
| t _{d(on)} | Turn-On Delay Time | V _{GS} =10V, V _{DS} =15V, R _{GEN} =3Ω I _D =20A | | 5 | | ns |
| t _{d(off)} | Turn-Off Delay Time | | | 19 | | ns |
| t _{d(r)} | Turn-On Rise Time | | | 12 | | ns |
| t _{d(f)} | Turn-Off Fall Time | | | 6 | | ns |
| Source-Drain Diode Characteristics | | | | | | |
| V _{SD} | Diode Forward Voltage | V _{GS} =0V, I _S =24A | | | 1.2 | V |
| I _S | Diode Forward Current | | | | 30 | A |
| t _{rr} | Reverse Recovery Time | T _J =25°C, I _F =20A | | 19 | | nS |
| Q _{rr} | Reverse Recovery Charge | Di/dt=100A/μs | | 10 | | nC |
| t _{on} | Forward Turn-On Time | Intrinsic turn-on time is negligible(turn-on is dominated by LS) | | | | |

Typical Characteristics

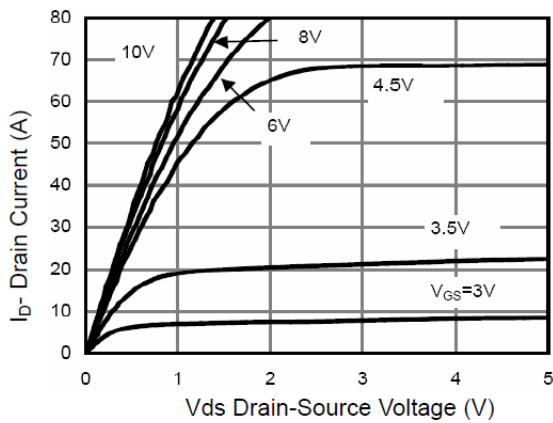


Figure 1 Output Characteristics

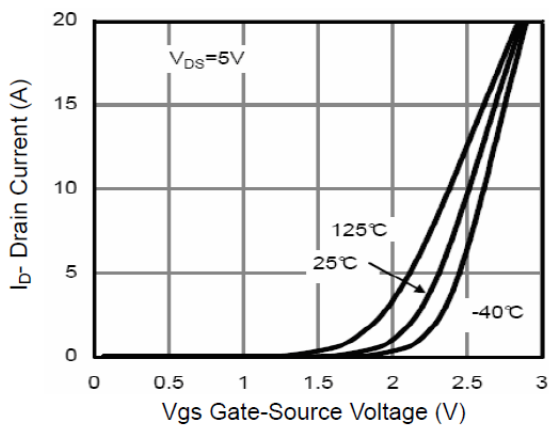


Figure 2 Transfer Characteristics

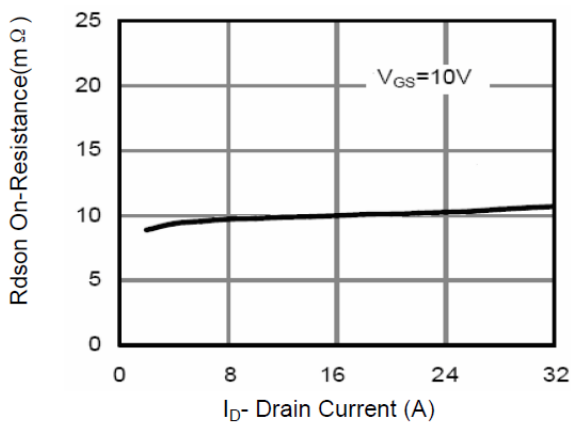


Figure 3 $R_{DS(on)}$ - Drain Current

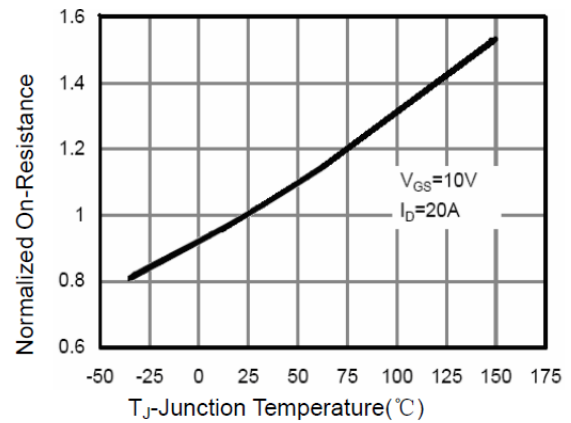


Figure 4 $R_{DS(on)}$ -Junction Temperature

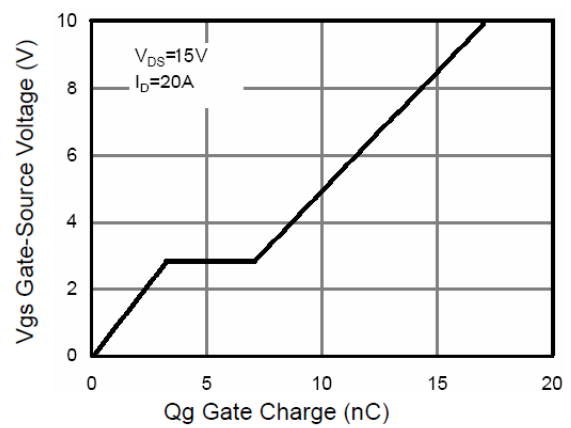


Figure 5 Gate Charge

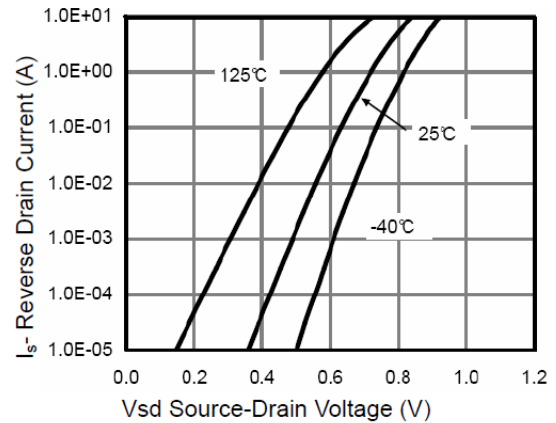


Figure 6 Source- Drain Diode Forward

Typical Characteristics

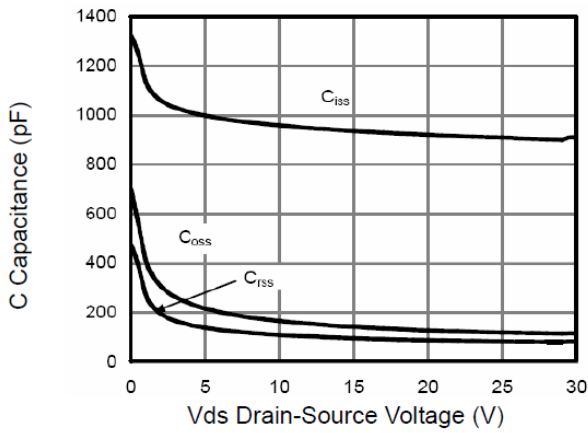


Figure 7 Capacitance vs Vds

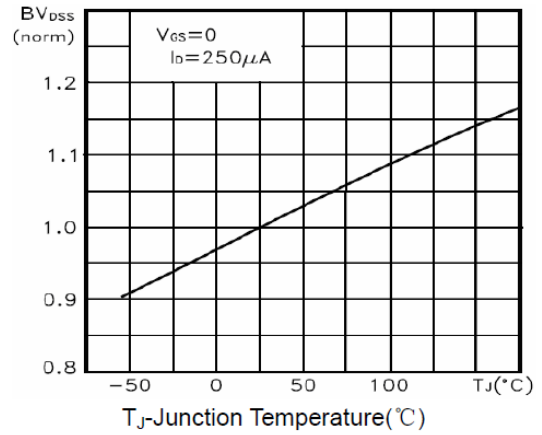


Figure 9 BV_{DSS} vs Junction Temperature

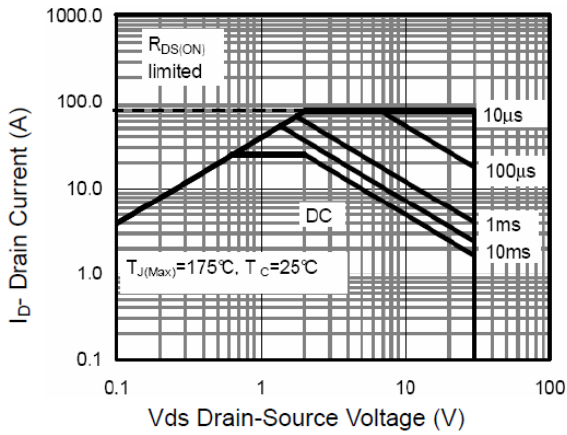


Figure 8 Safe Operation Area

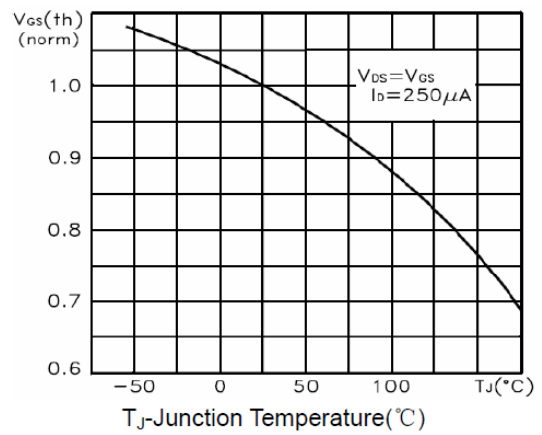


Figure 10 $V_{GS(th)}$ vs Junction Temperature

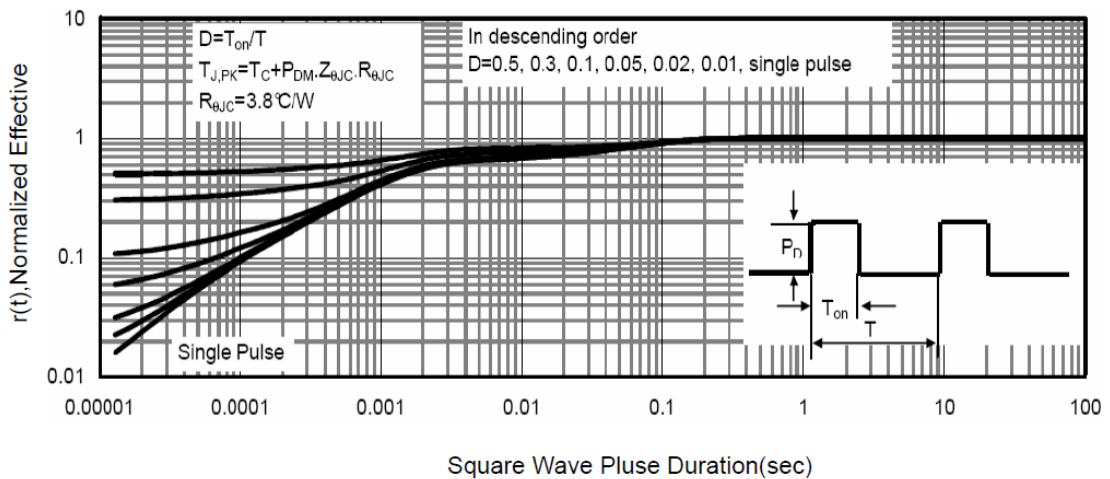
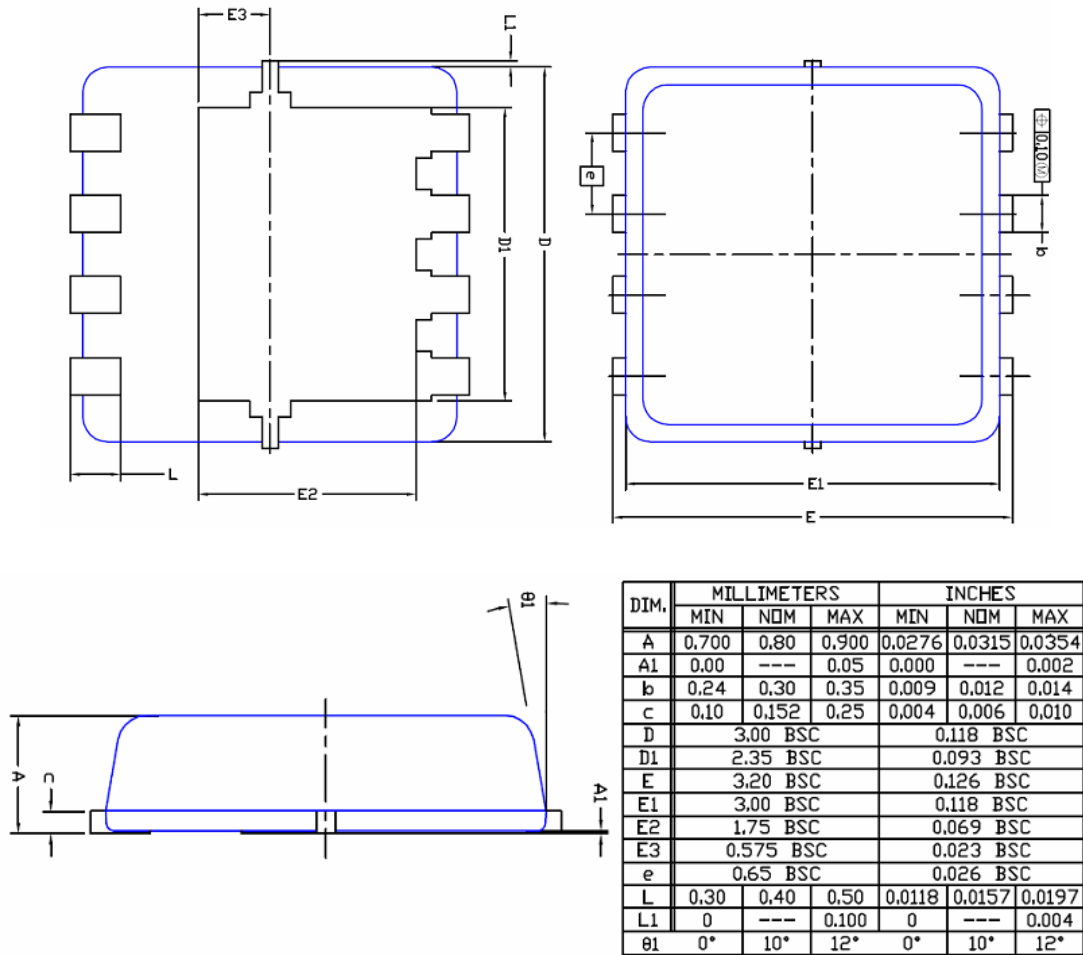


Figure 11 Normalized Maximum Transient Thermal Impedance

SE3D080M

Package Outline Dimension

DFN3X3 EP



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