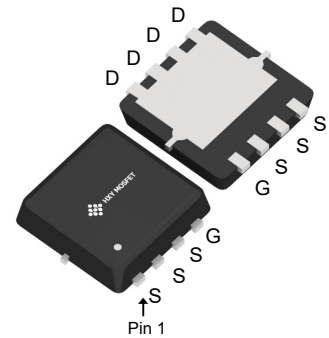


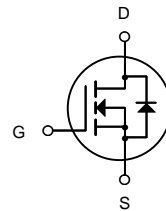


Description

The DMT3003LFG-13 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



DFN3X3-8L



N-Channel MOSFET

General Features

$V_{DS} = 30V$ $I_D = 100A$

$R_{DS(ON)} < 3m\Omega$ @ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply

Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|---------------|-----------|------------|----------|
| DMT3003LFG-13 | DFN3X3-8L | HXY MOSFET | 5000 |

Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise noted)

| Symbol | Parameter | Rating | Units |
|-----------------------|--|------------|-------|
| V _{DS} | Drain-Source Voltage | 30 | V |
| V _{GS} | Gate-Source Voltage | ±20 | V |
| $I_D@T_c=25^\circ C$ | Continuous Drain Current, V_{GS} @ 10V | 100 | A |
| $I_D@T_c=100^\circ C$ | Continuous Drain Current, V_{GS} @ 10V | 60 | A |
| IDM | Pulsed Drain Current ¹ | 320 | A |
| EAS | Single Pulse Avalanche Energy ² | 156 | mJ |
| P _D | Total Power Dissipation | 31.7 | W |
| TSTG | Storage Temperature Range | -55 to 150 | °C |
| T _J | Operating Junction Temperature Range | -55 to 150 | °C |
| R _{θJC} | Thermal Resistance Junction-Case | 3.94 | °C/W |



Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|--------------|---|---|-----|------|-----------|------------|
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\mu A$ | 30 | --- | --- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS}=0V, V_{DS}=30V$ | --- | --- | 1 | μA |
| I_{GSS} | Gate-Source Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0A$ | --- | --- | ± 100 | nA |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}=V_{DS}, I_D=250\mu A$ | 1 | 1.6 | 2.5 | V |
| $R_{DS(on)}$ | Drain-Source On Resistance ³ | $V_{GS}=10V, I_D=30A$ | --- | 2.5 | 3 | m Ω |
| | | $V_{GS}=4.5V, I_D=20A$ | --- | 4.3 | 5.5 | |
| C_{iss} | Input Capacitance | $V_{DS}=15V, V_{GS}=0V, f=1MHz$ | --- | 3499 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 499 | -- | |
| C_{riss} | Reverse Transfer Capacitance | | --- | 430 | --- | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DS}=15V, I_D=30A,$ $R_G=3\Omega, V_{GS}=10V$ | --- | 12 | --- | ns |
| t_r | Rise Time | | --- | 119 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 59 | --- | ns |
| t_f | Fall Time | | --- | 109 | --- | ns |
| Q_g | Total Gate Charge | $V_{GS}=10V, V_{DS}=15V,$ $I_D=30A$ | --- | 69 | --- | nC |
| Q_{gs} | Gate-Source Charge | | --- | 10 | --- | nC |
| Q_{gd} | Gate-Drain "Miller" Charge | | --- | 17 | --- | nC |
| V_{SD} | Diode Forward Voltage | $V_{GS}=0V, I_{SD}=30A$ | --- | --- | 1.2 | V |
| I_S | Continuous Drain Current | $V_D=V_G=0V$ | --- | --- | 100 | A |
| I_{SM} | Pulsed Drain Current | | --- | --- | 320 | A |
| T_{rr} | Reverse Recovery Time | $I_F=20A, T_J=25^{\circ}\text{C}$ | --- | 21 | --- | NS |
| Q_{rr} | Reverse Recovery Charge | $di/dt=100A/\mu s$ | --- | 9 | --- | NC |

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=15V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=25A$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Typical Performance Characteristics

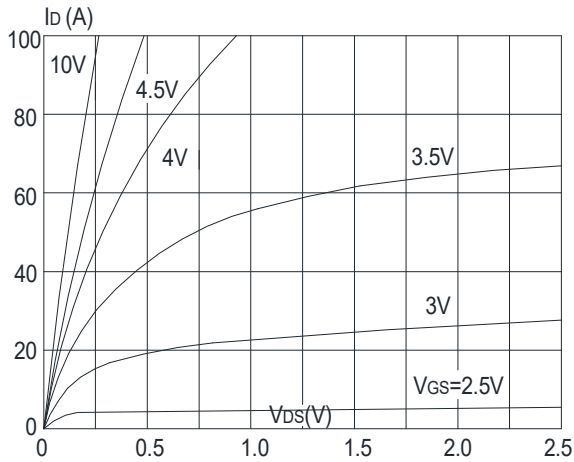


Figure 1: Output Characteristics

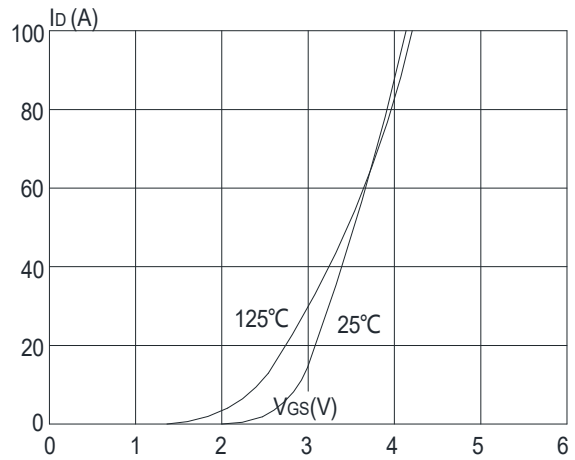


Figure 2: Typical Transfer Characteristics

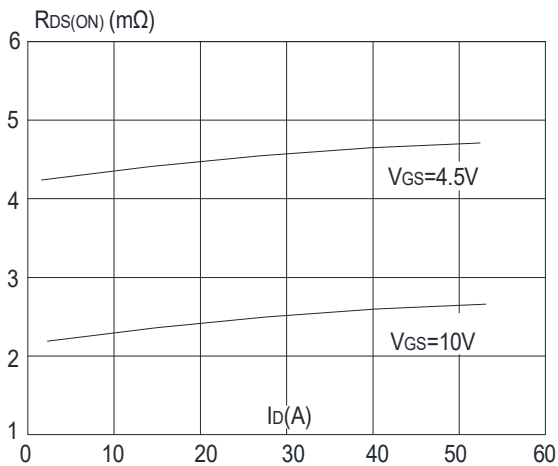


Figure 3: On-resistance vs. Drain Current

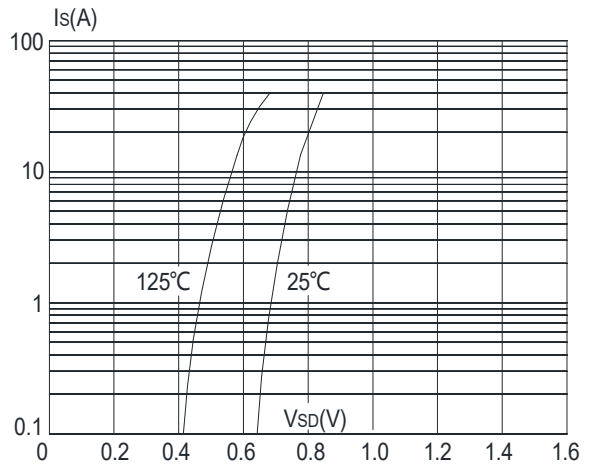


Figure 4: Body Diode Characteristics

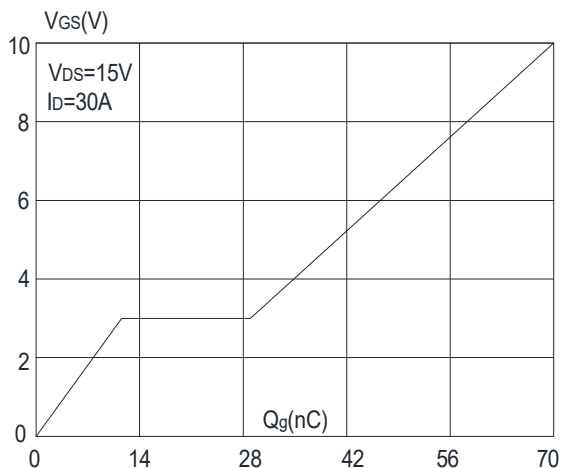


Figure 5: Gate Charge Characteristics

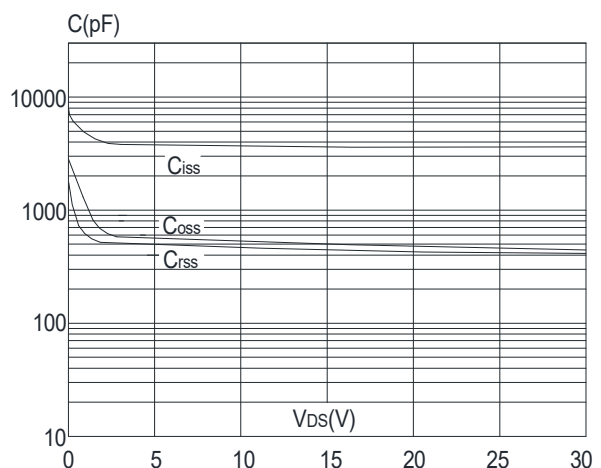


Figure 6: Capacitance Characteristics

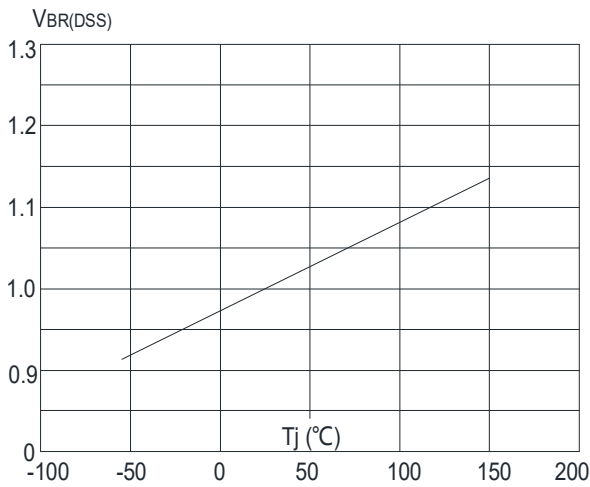


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

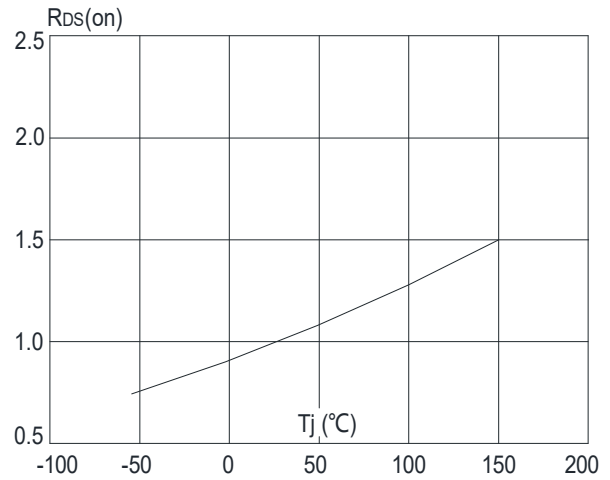


Figure 8: Normalized on Resistance vs. Junction Temperature

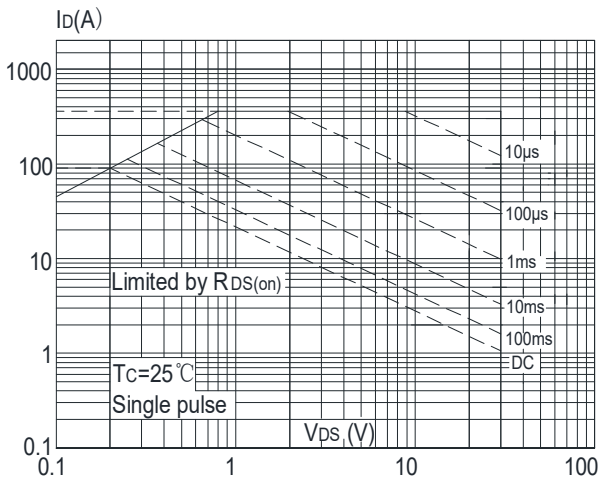


Figure 9: Maximum Safe Operating Area

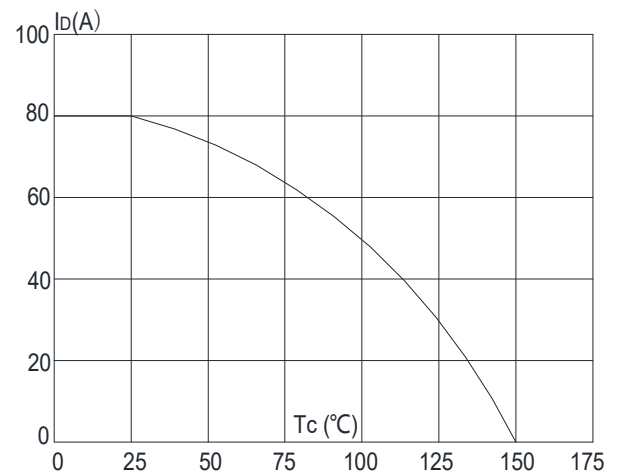


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

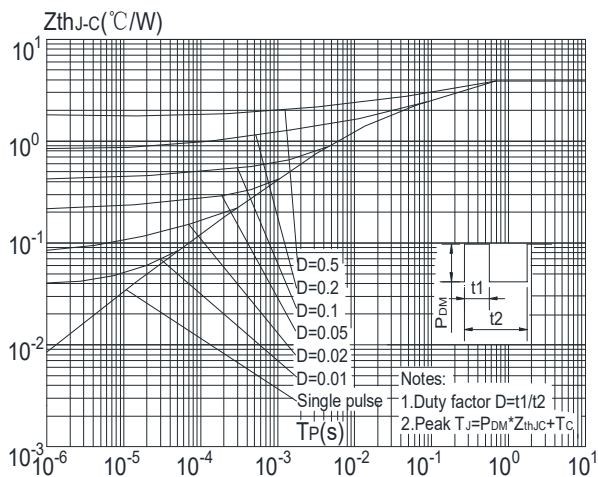
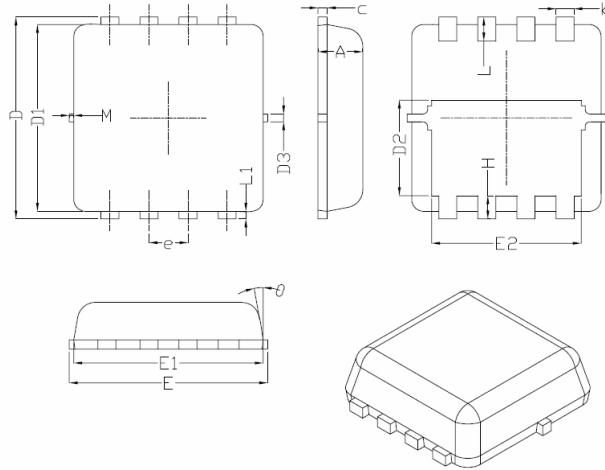


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



DFN3X3-8L Package Information



| Symbol | Dimensions In 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 | 1.48 | 1.58 | 1.68 |
| 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 | 0.65BSC | | |
| H | 0.30 | 0.39 | 0.50 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | - | 0.13 | - |
| M | * | * | 0.15 |
| θ | | 10° | 12° |



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