

GSM3346W

40V N & P Pair Enhancement Mode MOSFET

Product Description

GSM3346W, N & P Pair enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

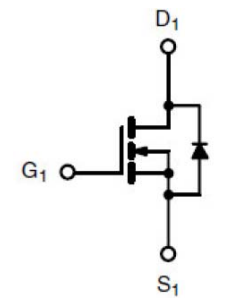
- N-Channel
40V/15A, $R_{DS(ON)}=28m\Omega@V_{GS}=10V$
40V/12A, $R_{DS(ON)}=38m\Omega@V_{GS}=4.5V$
- P-Channel
-40V/-12A, $R_{DS(ON)}=45m\Omega@V_{GS}=-10V$
-40V/-10A, $R_{DS(ON)}=62m\Omega@V_{GS}=-4.5V$

Applications

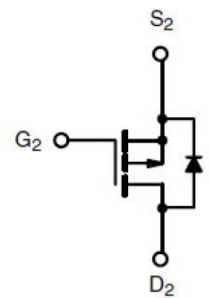
- DC/DC Converter
- Load Switch
- DC FAN

Packages & Pin Assignments

| GSM3346WFF (DFN3X3-8L) | | |
|--|--------|-------------|
| <p style="text-align: center;">BOTTOM VIEW</p> | | |
| Pin | Symbol | Description |
| 1 | S1 | Source 1 |
| 2 | G1 | Gate 1 |
| 3 | S2 | Source 2 |
| 4 | G2 | Gate 2 |
| 5 | D2 | Drain 2 |
| 6 | D2 | Drain 2 |
| 7 | D1 | Drain 1 |
| 8 | D1 | Drain 1 |

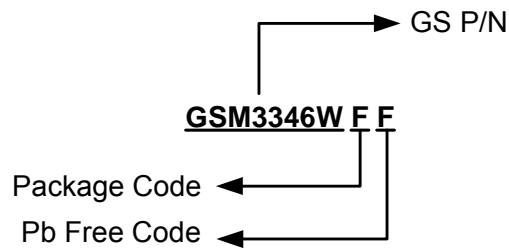


N-Channel MOSFET



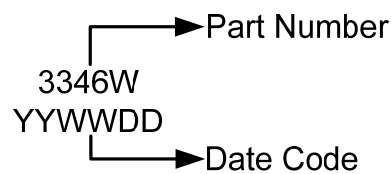
P-Channel MOSFET

Ordering Information



| Part Number | Package | Quantity Reel |
|-------------|-----------|---------------|
| GSM3346WFF | DFN3X3-8L | 5000 PCS |

Marking Information



Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

| Symbol | Parameter | Typical | | Unit | |
|------------------|--|----------------------|-----------|------|---|
| | | N-Channel | P-Channel | | |
| V _{DSS} | Drain-Source Voltage | 40 | -40 | V | |
| V _{GSS} | Gate –Source Voltage | ±20 | ±20 | V | |
| I _D | Continuous Drain Current (T _J =150°C) | T _A =25°C | 15 | -12 | A |
| | | T _A =70°C | 12 | -10 | |
| I _{DM} | Pulsed Drain Current | 40 | -40 | A | |
| I _S | Continuous Source Current (Diode Conduction) | 10 | -10 | A | |
| P _D | Power Dissipation | T _A =25°C | 2 | 1.8 | W |
| | | T _A =70°C | 1.5 | 1.2 | |
| T _J | Operating Junction Temperature | 150 | 150 | °C | |
| T _{STG} | Storage Temperature Range | -55/150 | -55/150 | °C | |
| R _{θJA} | Thermal Resistance-Junction to Ambient | 56 | 62.5 | °C/W | |

Electrical Characteristics (N-Channel)

(T_A=25°C unless otherwise noted)

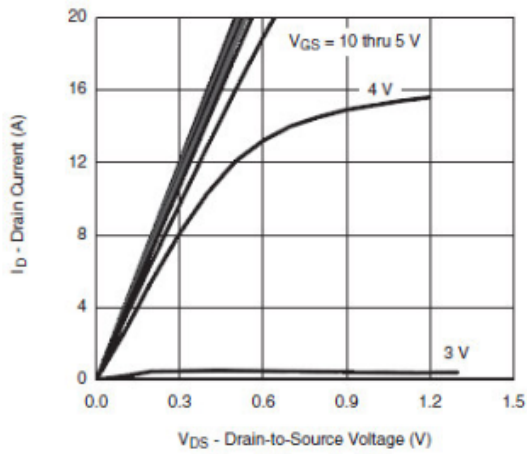
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|---------------------------------|---|-----|------|------|------|
| Static | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | 40 | | | V |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250μA | 1.0 | | 3.0 | V |
| I _{GSS} | Gate Leakage Current | V _{DS} =0V, V _{GS} =±20V | | | ±100 | nA |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =32V, V _{GS} =0V | | | 1 | μA |
| | | V _{DS} =32V, V _{GS} =0V, T _J =85°C | | | 10 | |
| I _{D(on)} | On-State Drain Current | V _{DS} ≥5V, V _{GS} =10V | 20 | | | A |
| R _{DS(on)} | Drain-Source On-Resistance | V _{GS} =10V, I _D =15A | | 20 | 28 | mΩ |
| | | V _{GS} =4.5V, I _D =12A | | 30 | 38 | |
| g _{FS} | Forward Transconductance | V _{DS} =15V, I _D =5.0A | | 25 | | S |
| V _{SD} | Diode Forward Voltage | I _S =2A, V _{GS} =0V | | 0.85 | 1.2 | V |
| Dynamic | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =20V, V _{GS} =0V, f=1MHz | | 850 | | pF |
| C _{oss} | Output Capacitance | | | 110 | | |
| C _{rss} | Reverse Transfer Capacitance | | | 75 | | |
| Q _g | Total Gate Charge | V _{DS} =20V, V _{GS} =4.5V, I _D =5A | | 10 | 14 | nC |
| Q _{gs} | Gate-Source Charge | | | 2.8 | | |
| Q _{gd} | Gate-Drain Charge | | | 3.2 | | |
| t _{d(on)} | Turn-On Time | V _{DD} =20V, R _L =4Ω, I _D =5.0A, V _{GEN} =10V, R _G =1Ω | | 6 | 12 | ns |
| T _r | | | | 10 | 20 | |
| t _{d(off)} | Turn-Off Time | | | 20 | 36 | |
| T _f | | | | 6 | 12 | |

Electrical Characteristics (P-Channel)

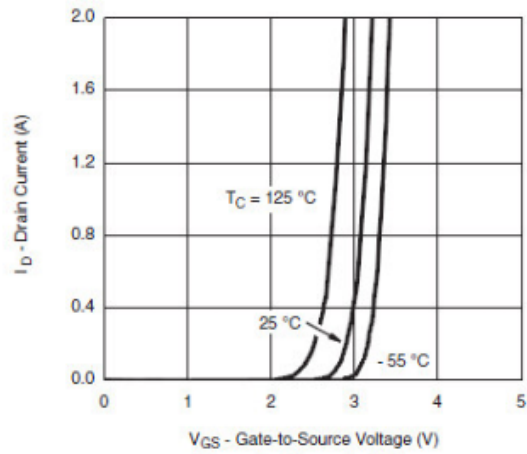
(T_A=25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|----------------------|---------------------------------|---|---------------|------|------|------|----|
| Static | | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =-250μA | -40 | | | V | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =-250μA | -1.0 | | -3.0 | | |
| I _{GSS} | Gate Leakage Current | V _{DS} =0V, V _{GS} =±20V | | | ±100 | nA | |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =-32V, V _{GS} =0V | | | -1 | μA | |
| | | V _{DS} =-32V, V _{GS} =0V, T _J =85°C | | | -20 | | |
| I _{D(on)} | On-State Drain Current | V _{DS} ≤ -5V, V _{GS} =-10V | -20 | | | A | |
| R _{DS(on)} | Drain-Source On-Resistance | V _{GS} =-10.0V, I _D =-12A | | 34 | 45 | mΩ | |
| | | V _{GS} =-4.5V, I _D =-10A | | 48 | 62 | | |
| g _{FS} | Forward Transconductance | V _{DS} =-15V, I _D =-5A | | 20 | | S | |
| V _{SD} | Diode Forward Voltage | I _S =-2A, V _{GS} =0V | | -0.8 | -1.2 | V | |
| Dynamic | | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =-20V, V _{GS} =0V, f=1MHz | | 1100 | | pF | |
| C _{oss} | Output Capacitance | | | 145 | | | |
| C _{rss} | Reverse Transfer Capacitance | | | 115 | | | |
| Q _g | Total Gate Charge | V _{DS} =-20V, V _{GS} =-4.5V, I _D =-5.0A | | 13 | 20 | nC | |
| Q _{gs} | Gate-Source Charge | | | 4.5 | | | |
| Q _{gd} | Gate-Drain Charge | | | 6.5 | | | |
| t _{d(on)} | Turn-On Time | V _{DD} =-20V, R _L =4Ω, I _D =-5.0A, V _{GEN} =-4.5V, R _G =1Ω | | 40 | 80 | ns | |
| T _r | | | | 55 | 100 | | |
| t _{d(off)} | | | Turn-Off Time | | 30 | | 60 |
| T _f | | | | | 12 | | 20 |

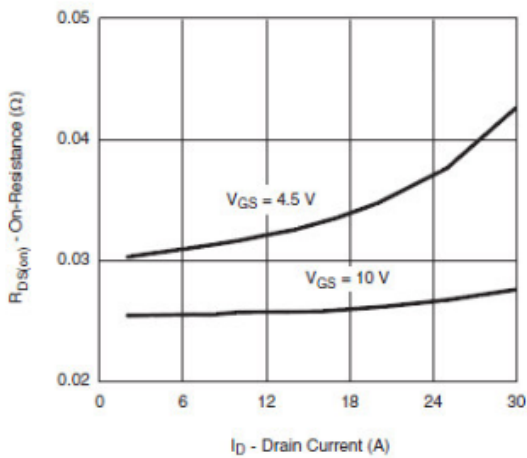
Typical Performance Characteristics (N-Channel)



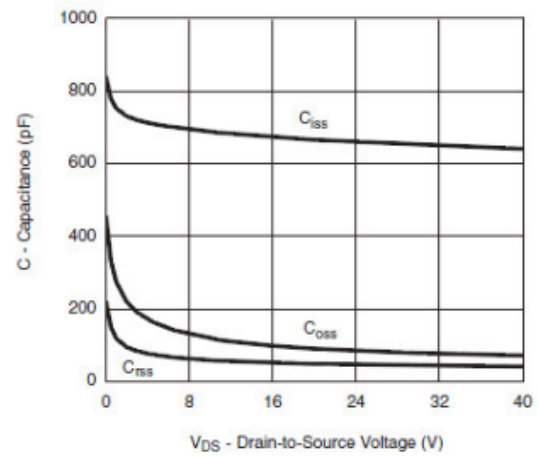
Output Characteristics



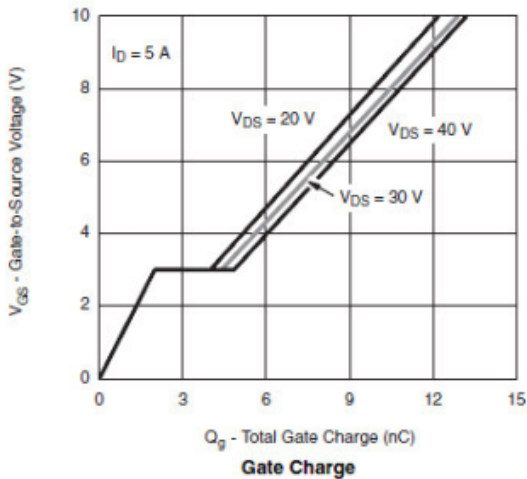
Transfer Characteristics



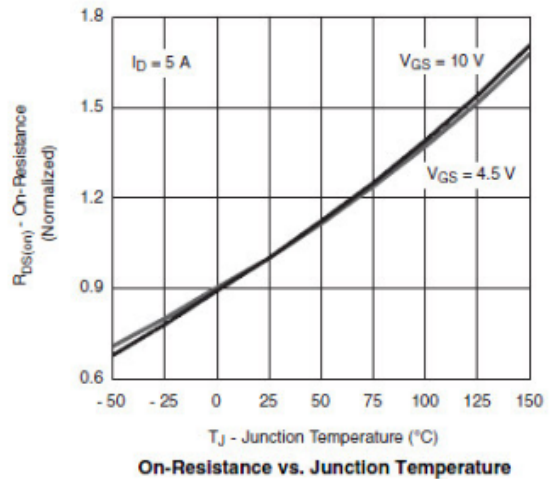
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

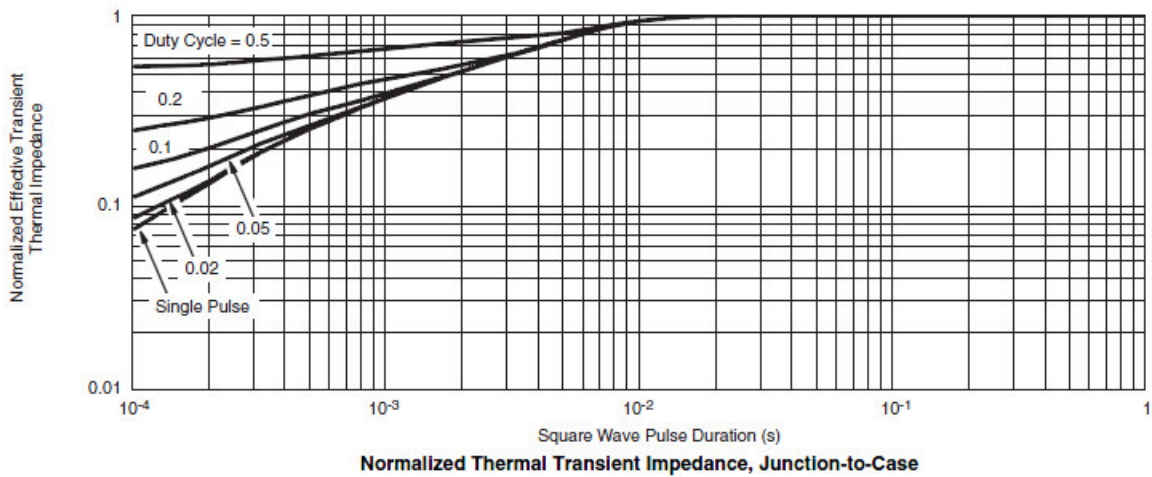
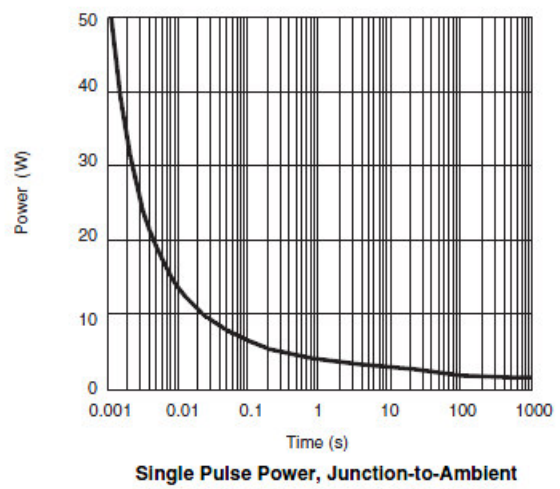
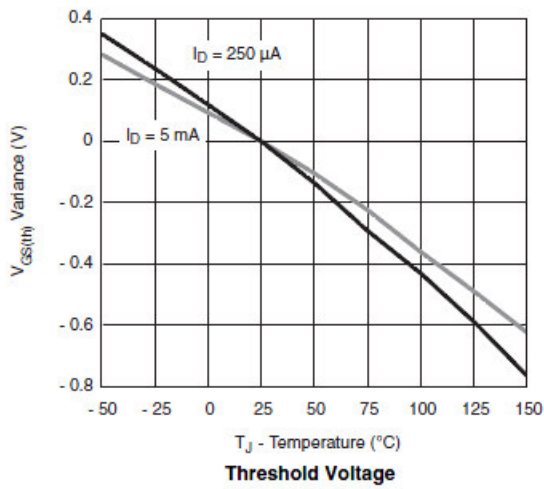
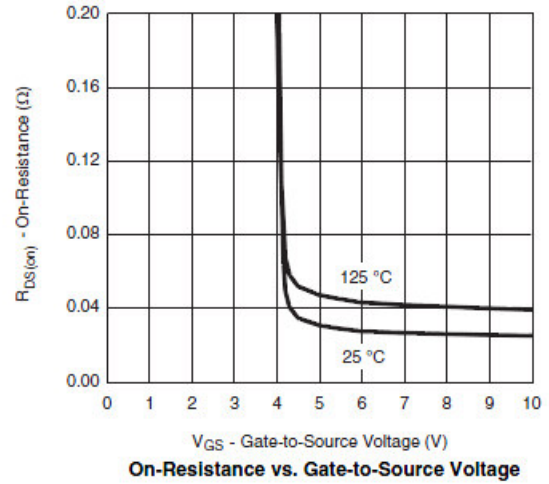
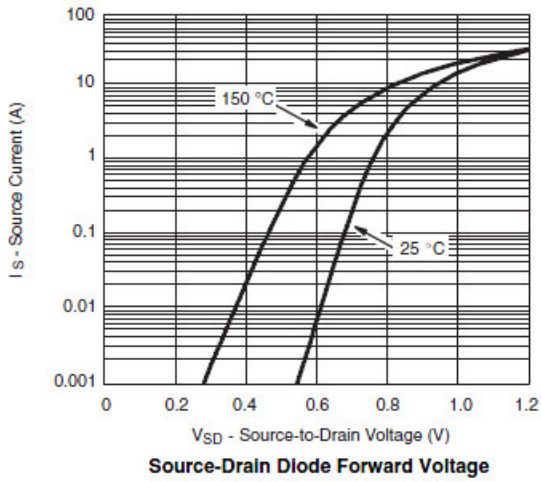


Gate Charge

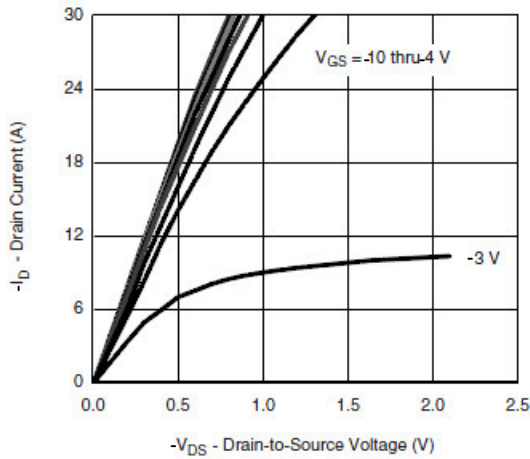


On-Resistance vs. Junction Temperature

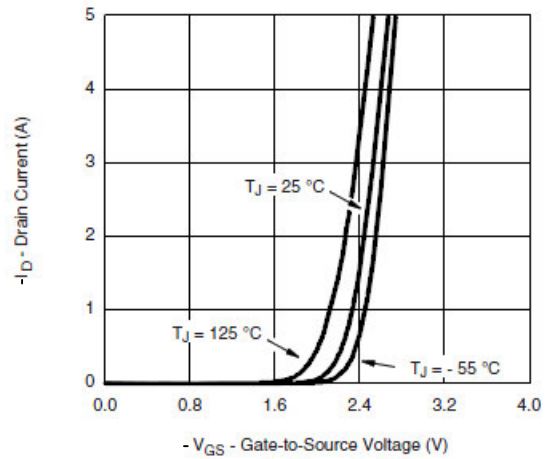
Typical Performance Characteristics (N-Channel Continue)



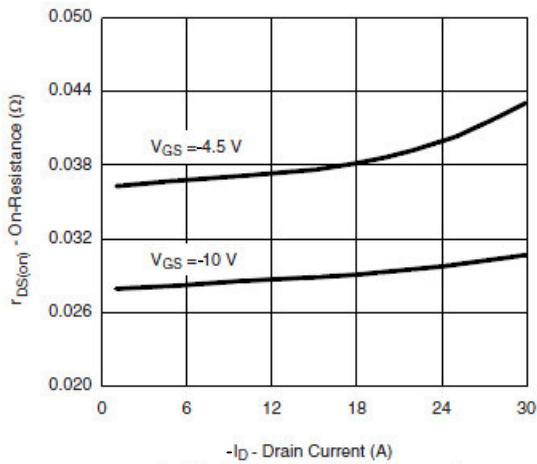
Typical Performance Characteristics (P-Channel)



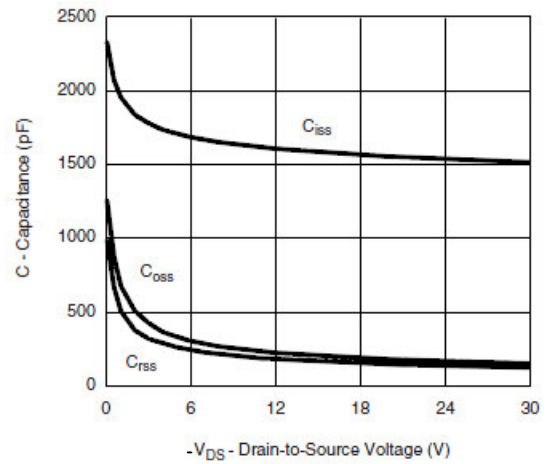
Output Characteristics



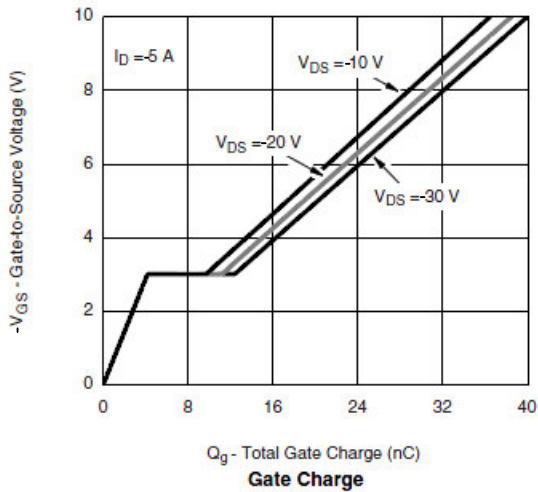
Transfer Characteristics



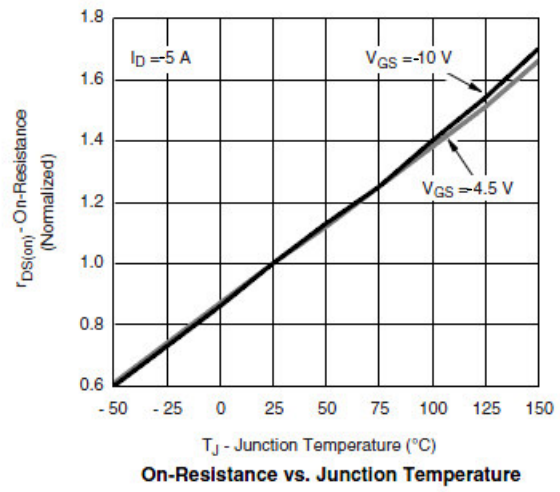
On-Resistance vs. Drain Current



Capacitance

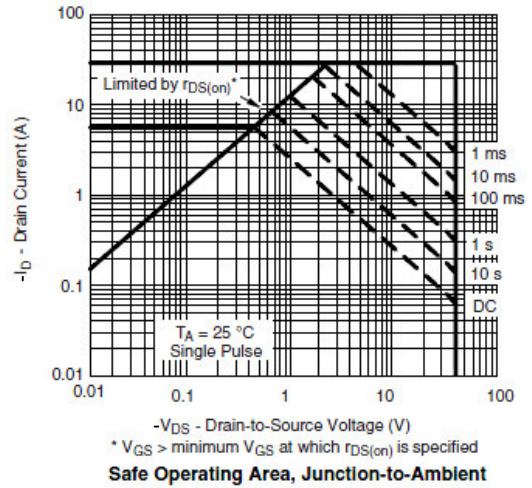
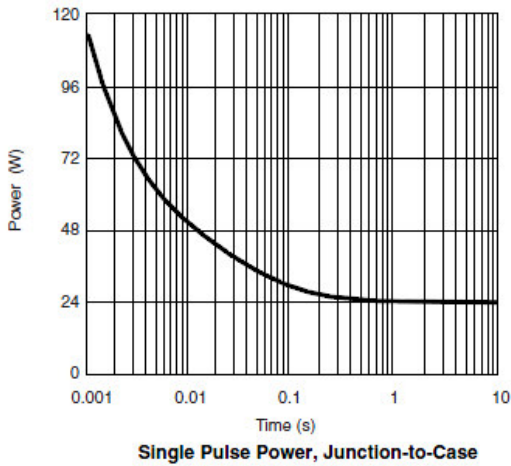
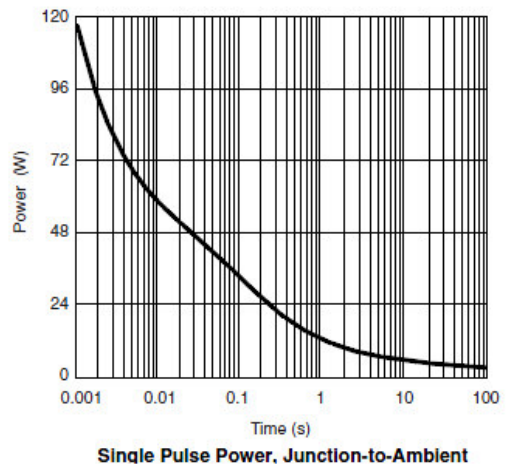
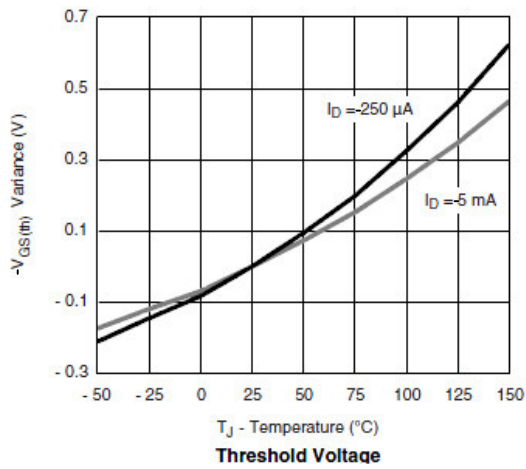
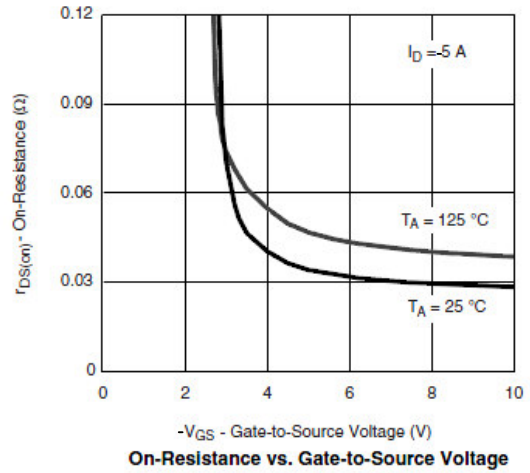
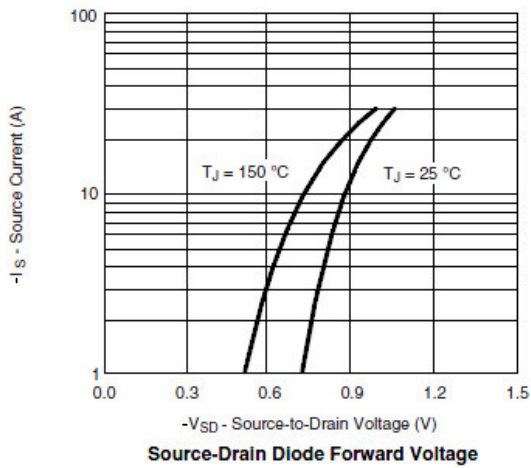


Gate Charge



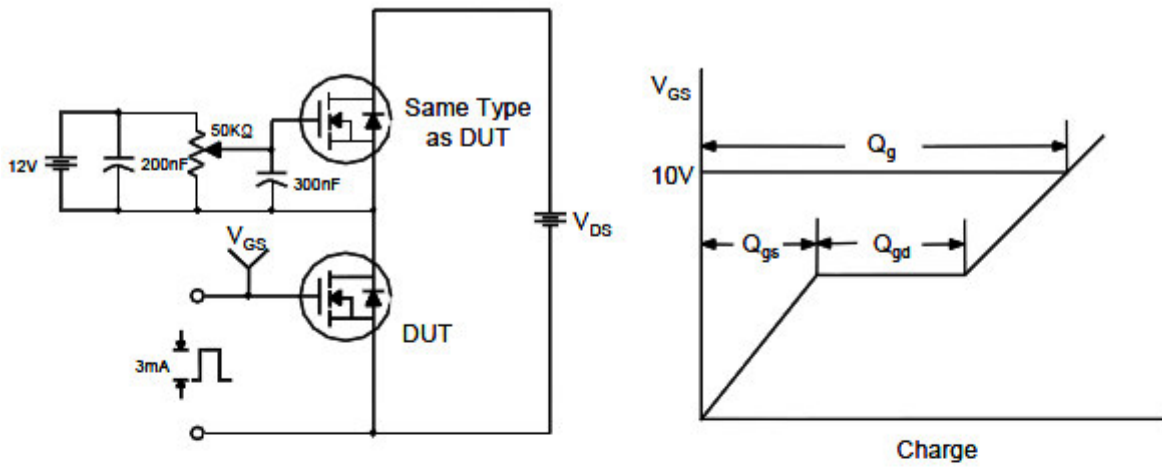
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (P-Channel Continue)

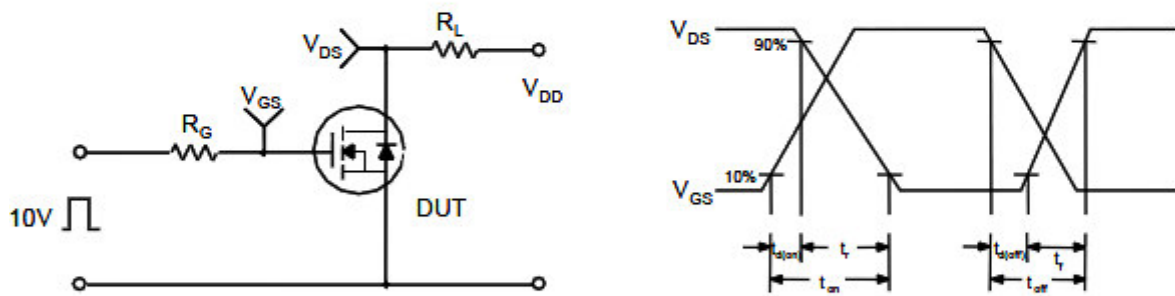


Typical Characteristics

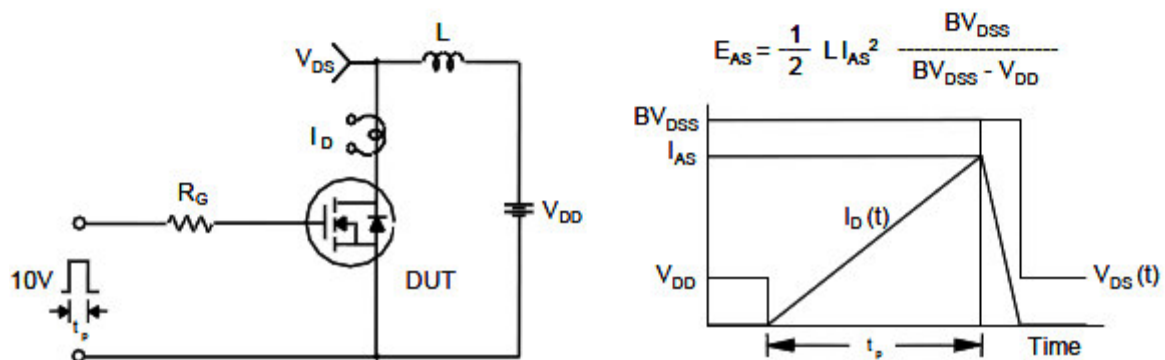
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

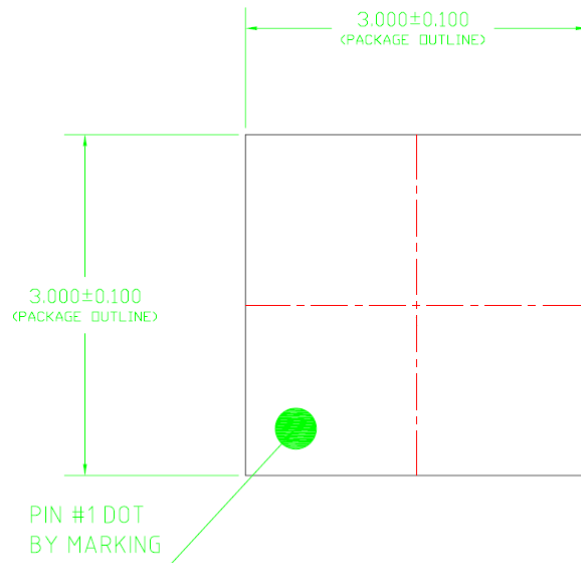


Unclamped Inductive Switching Test Circuit & Waveforms

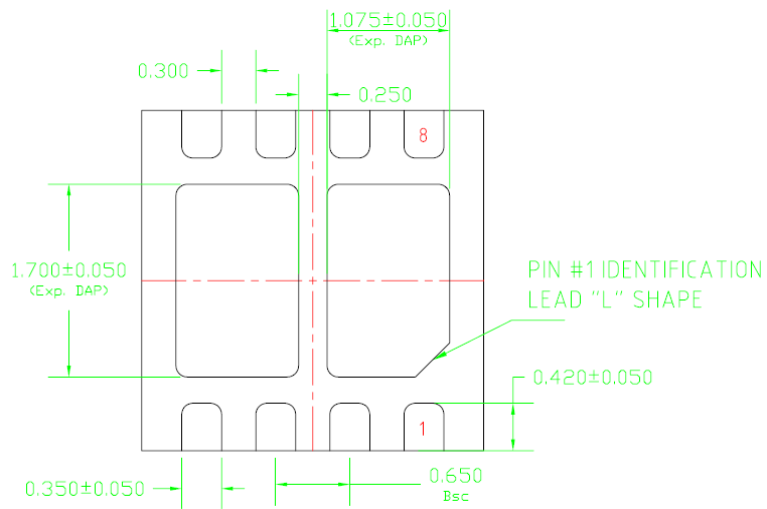


Package Dimension

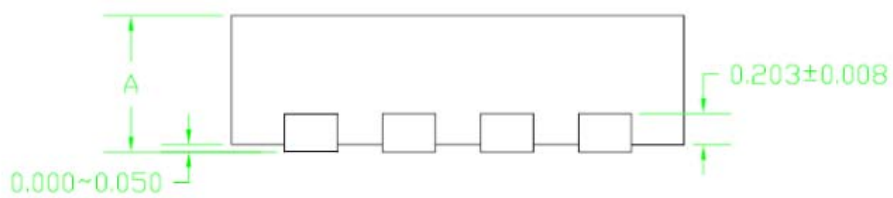
DFN3X3-8L



TOP VIEW







BOTTOM VIEW




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