GENERAL SEMICONDUCTOR®

GF4800

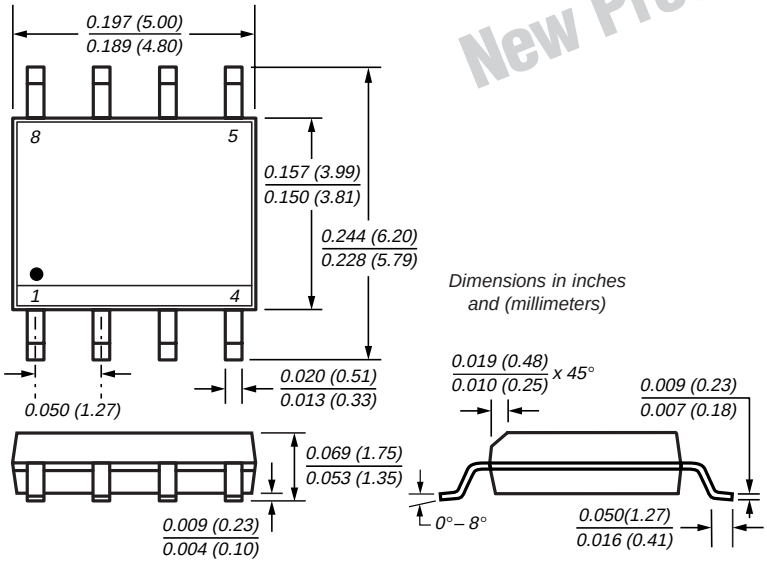
N-Channel Enhancement-Mode MOSFET

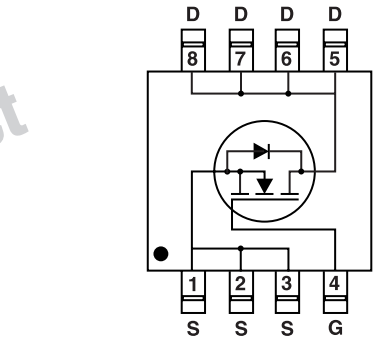
V_{DS} 30V **$R_{DS(ON)}$** 18.5mΩ **I_D** 9A

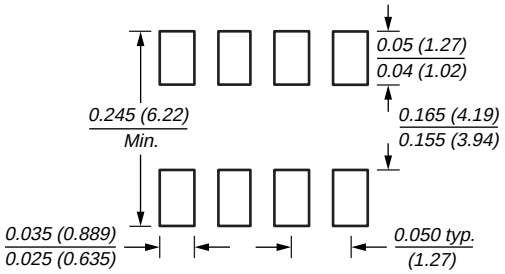
TRENCH GENFET®

New Product

SO-8







Mounting Pad Layout

Mechanical Data

Case: SO-8 molded plastic body

Terminals: Leads solderable per MIL-STD-750, Method 2026

High temperature soldering guaranteed: 250°C/10 seconds at terminals

Mounting Position: Any

Weight: 0.5g

Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Specially Designed for Low Voltage DC/DC Converters
- Fast Switching for High Efficiency
- Reduced Gate Charge

Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current T_J = 150°C(1)	T_A = 25°C T_A = 70°C	I_D	9 7	A
Pulsed Drain Current		I_{DM}	40	
Maximum Power Dissipation(1)	T_A = 25°C T_A = 70°C	P_D	2.5 1.6	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150	°C
Maximum Junction-to-Ambient(1) Thermal Resistance		$R_{\theta JA}$	50	°C/W

Notes: (1) Surface mounted on FR4 board, t ≤ 10 sec.

7/10/01

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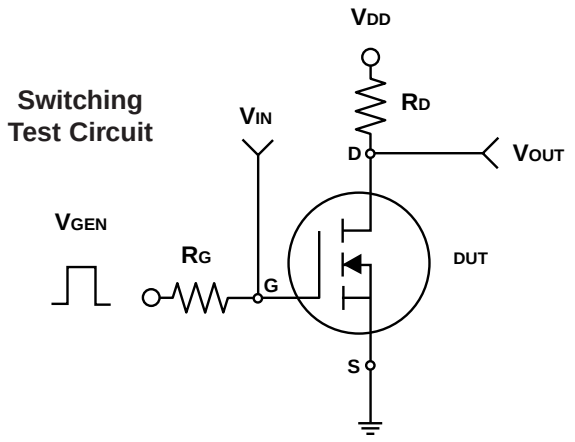
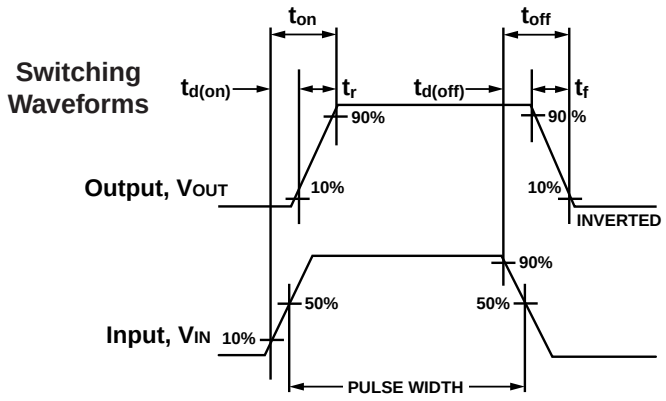
Electrical Characteristics (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250µA	30	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	0.8	–	3.0	V
Gate-Body Leakage	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	–	–	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	–	–	1	µA
		V_{DS} = 24V, V_{GS} = 0V, T_J = 55°C	–	–	5	
On-State Drain Current[1]	$I_{D(on)}$	V_{DS} ≥ 5V, V_{GS} = 10V	40	–	–	A
Drain-Source On-State Resistance[1]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 9A	–	15.5	18.5	mΩ
		V_{GS} = 4.5V, I_D = 7A	–	23.5	33	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15V, I_D = 9A	–	26	–	S
Dynamic						
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 5V, I_D = 9A	–	10.5	13	nC
		V_{DS} = 15V, I_D = 9A, V_{GS} = 10V	–	20.5	28	
Gate-Source Charge	Q_{gs}		–	3.5	–	
Gate-Drain Charge	Q_{gd}		–	3.1	–	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 15V, I_D = 1A, V_{GEN} = 10V, R_G = 6Ω, R_L = 15Ω	–	9	15	ns
Turn-On Rise Time	t_r		–	5	10	
Turn-Off Delay Time	$t_{d(off)}$		–	31	45	
Turn-Off Fall Time	t_f		–	5	10	
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz	–	1160	–	pF
Output Capacitance	C_{oss}		–	195	–	
Reverse Transfer Capacitance	C_{rss}		–	90	–	
Source-Drain Diode						
Diode Forward Voltage[1]	V_{SD}	I_S = 2.3A, V_{GS} = 0V	–	0.75	1.2	V
Continuous Source Current (Diode Conduction)	I_S	–	–	–	2.3	A

Notes: (1) Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%





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Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 – Output Characteristics

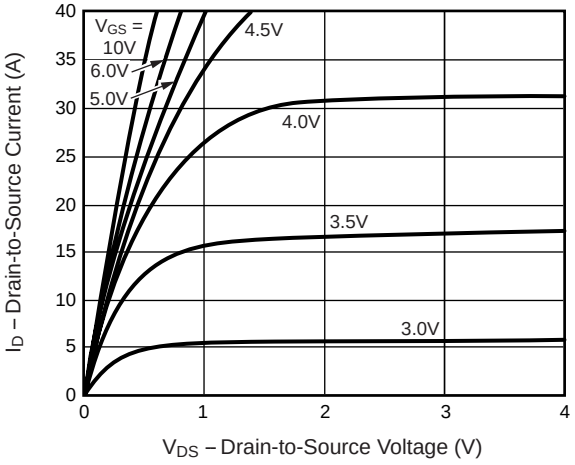

Fig. 2 – Transfer Characteristics

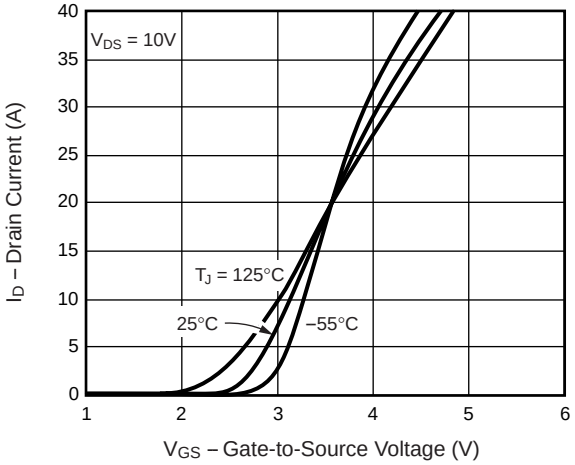

Fig. 3 – Threshold Voltage vs. Temperature

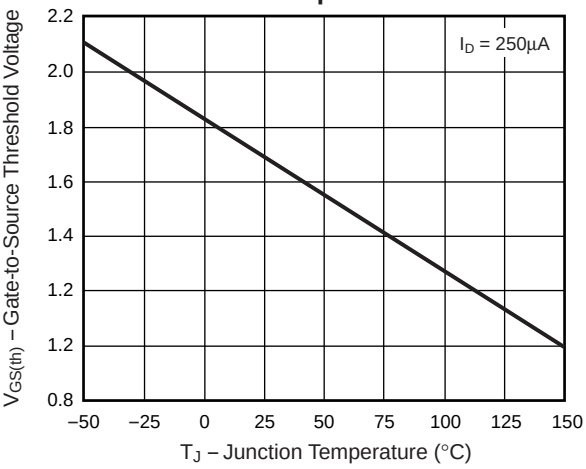

Fig. 4 – On-Resistance vs. Drain Current

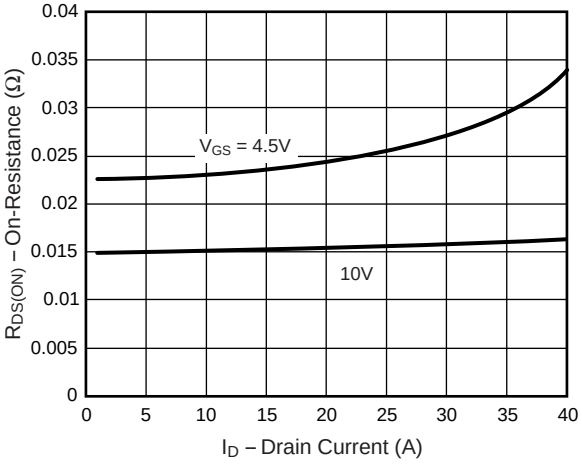

Fig. 5 – On-Resistance vs. Junction Temperature

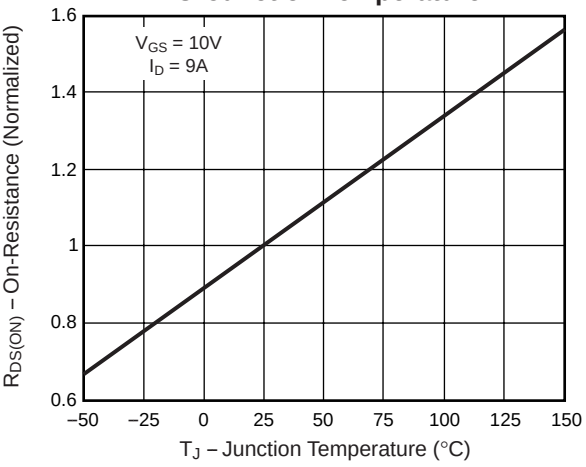

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Fig. 6 – On-Resistance vs. Gate-to-Source Voltage

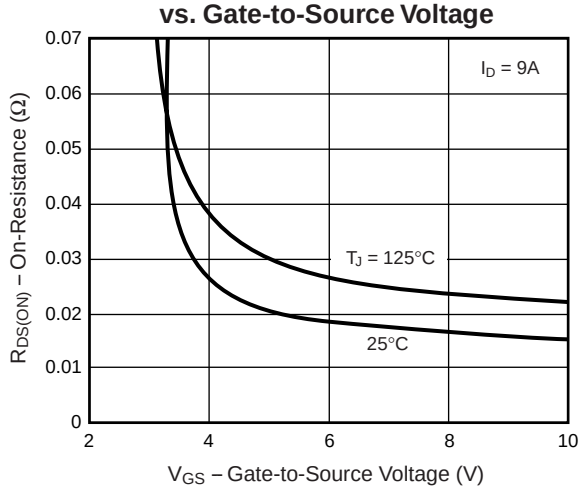

Fig. 7 – Gate Charge

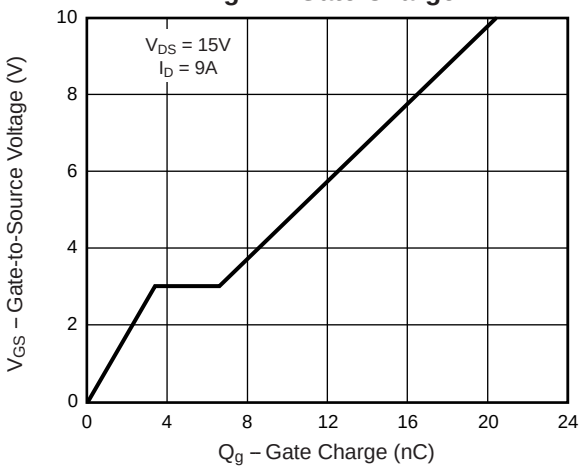

Fig. 8 – Capacitance

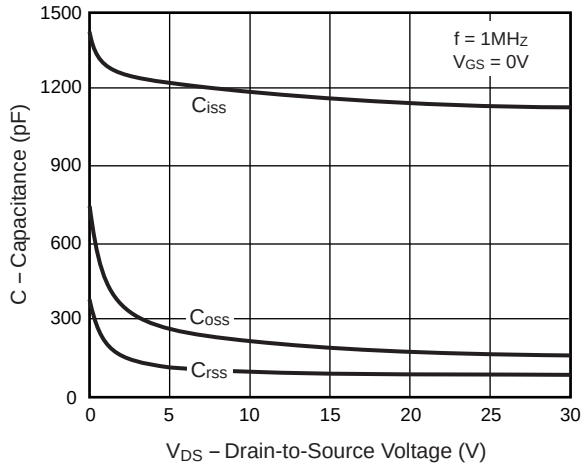

Fig. 9 – Source-Drain Diode Forward Voltage

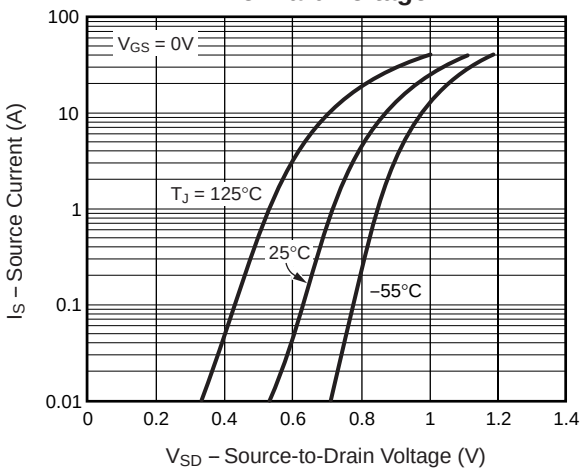

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Fig. 10 – Breakdown Voltage vs. Junction Temperature

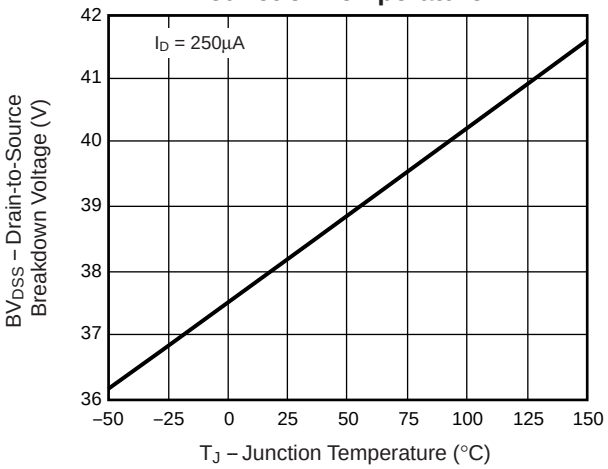

Fig. 11 – Transient Thermal Impedance

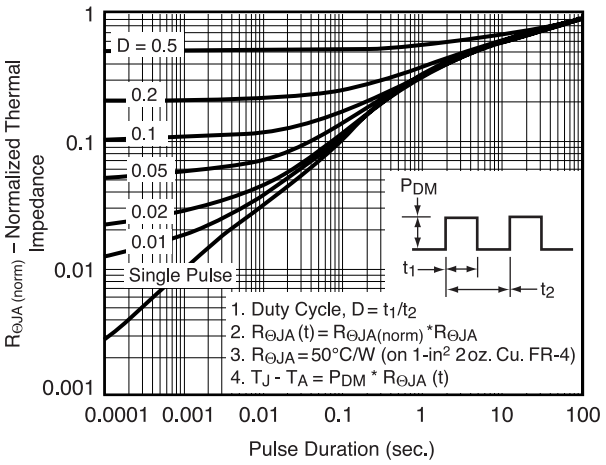

Fig. 12 – Power vs. Pulse Duration

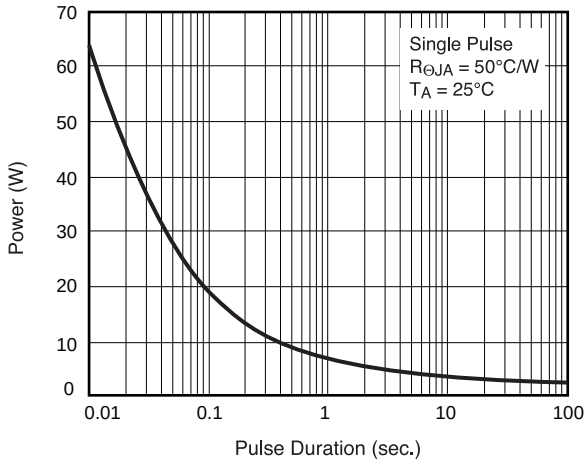

Fig. 13 – Maximum Safe Operating Area