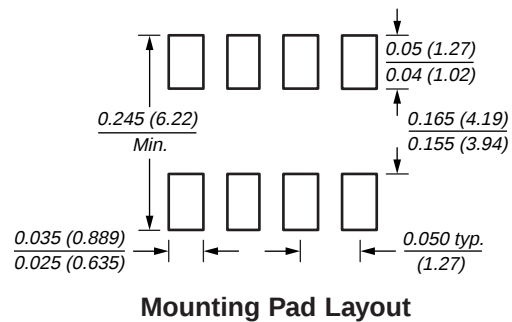
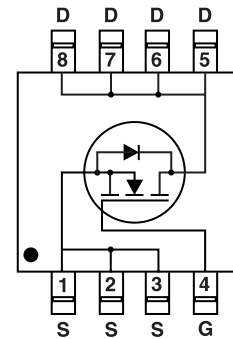
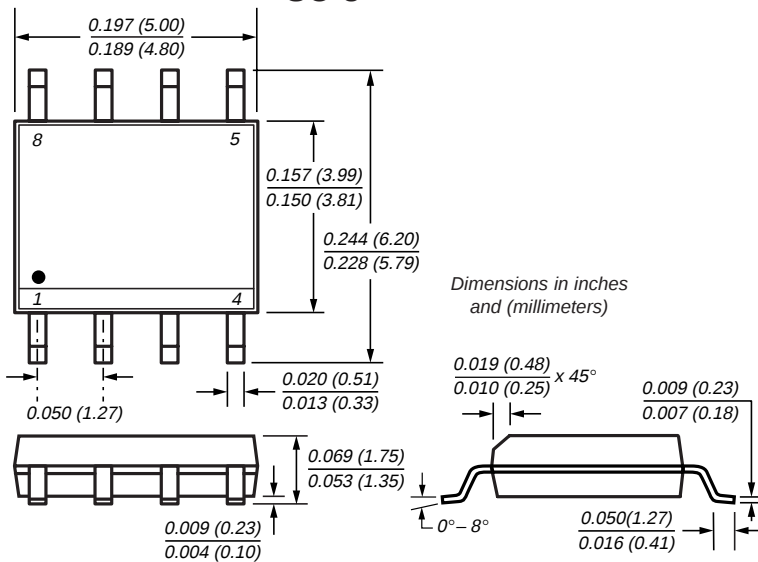


N-Channel Enhancement-Mode MOSFET

V_{DS} 30V $R_{DS(ON)}$ 9m Ω I_D 12.5A

TRENCH
GENFET®

SO-8



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

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current $T_J = 150^\circ\text{C}^{(1)}$	I_D	12.5	A
$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$		10.0	
Pulsed Drain Current	I_{DM}	± 50	
Continuous Source Current (Diode Conduction) ⁽¹⁾	I_S	2.3	
Maximum Power Dissipation ⁽¹⁾	P_D	2.5	W
$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$		1.6	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Maximum Junction-to-Ambient ⁽¹⁾ Thermal Resistance	$R_{\theta JA}$	50	$^\circ\text{C/W}$

Notes: (1) Surface mounted on FR4 board, $t \leq 10$ sec.

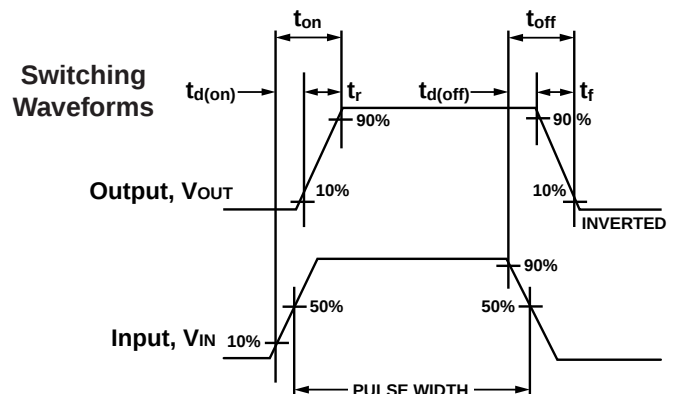
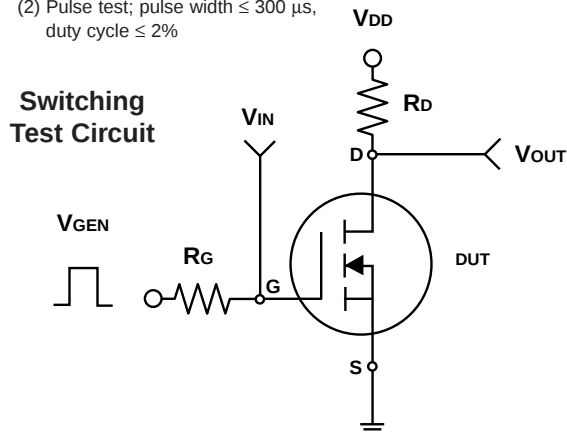
N-Channel Enhancement-Mode MOSFET

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	1.0	—	3.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	—	—	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V	—	—	1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =55°C	—	—	5	
On-State Drain Current ⁽²⁾	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} = 10V	30	—	—	A
Drain-Source On-State Resistance ⁽²⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 12.5A	—	7	9	mΩ
		V _{GS} = 4.5V, I _D = 10.5A	—	9.5	13	
Forward Transconductance ⁽²⁾	g _{fs}	V _{DS} = 15V, I _D = 12.5A	—	50	—	S
Dynamic						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 5V, I _D = 12.5A	—	31	48	nC
Gate-Source Charge	Q _{gs}	V _{DS} = 15V, V _{GS} =10V I _D = 12.5A	—	63	108	
Gate-Drain Charge	Q _{gd}		—	16	—	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, R _L = 15Ω I _D ≈ 1A, V _{GEN} = 10V R _G = 6Ω	—	10	16	ns
Rise Time	t _r		—	10	16	
Turn-Off Delay Time	t _{d(off)}		—	105	170	
Fall Time	t _f		—	33	66	
Input Capacitance	C _{iss}	V _{GS} = 0V	—	3500	—	pF
Output Capacitance	C _{oss}	V _{DS} = 15V	—	715	—	
Reverse Transfer Capacitance	C _{rss}	f = 1.0MHz	—	340	—	
Source-Drain Diode						
Diode Forward Voltage ⁽²⁾	V _{SD}	I _S = 2.3A, V _{GS} = 0V	—	—	1.1	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 2.3A, di/dt = 100A/μs	—	49	90	ns

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

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



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 – Output Characteristics

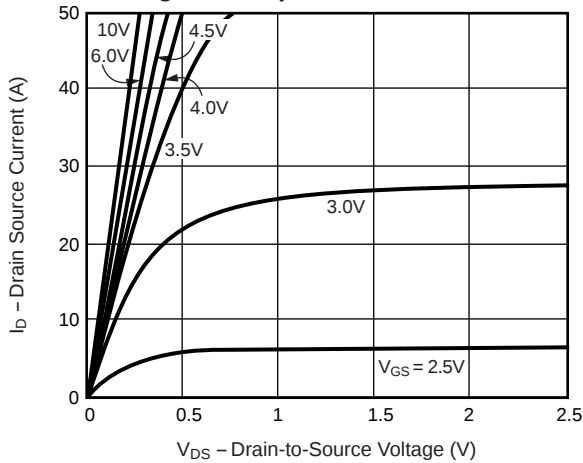
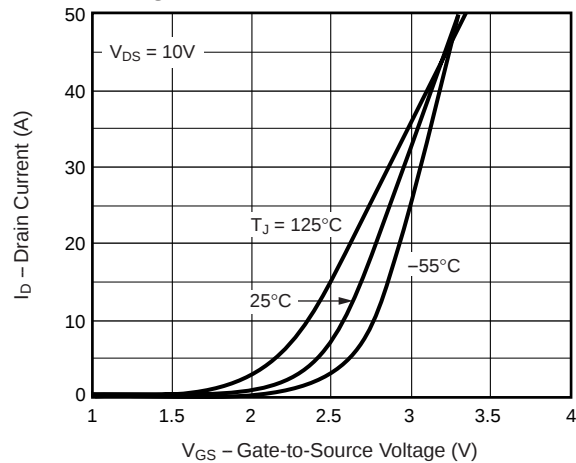
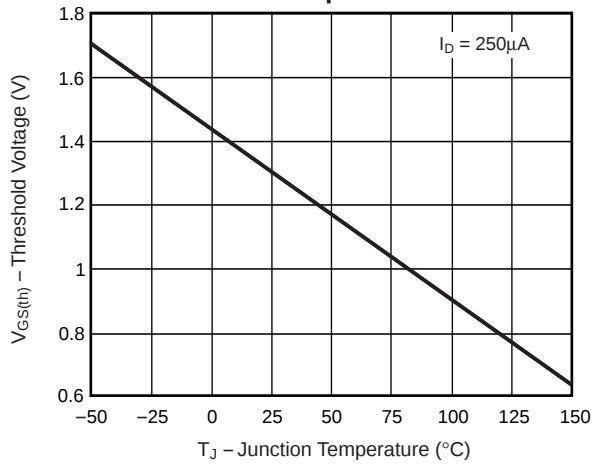


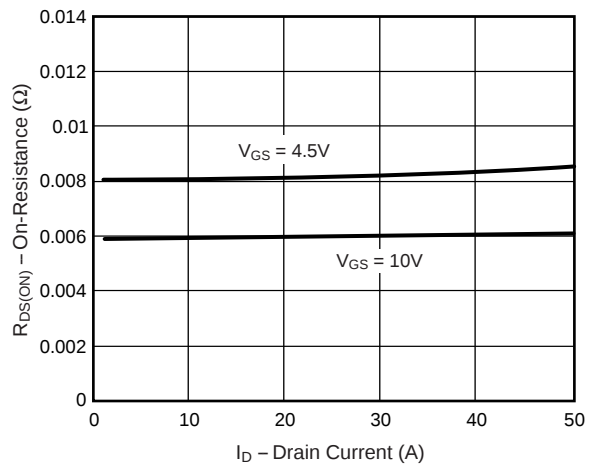
Fig. 2 – Transfer Characteristics



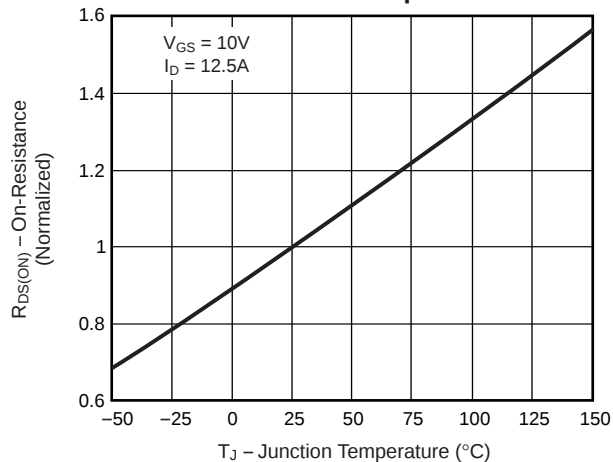
**Fig. 3 – Threshold Voltage
vs. Temperature**



**Fig. 4 – On-Resistance
vs. Drain Current**



**Fig. 5 – On-Resistance
vs. Junction Temperature**



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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

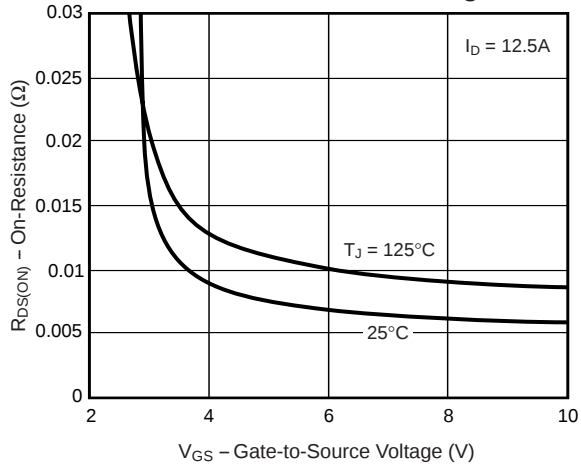


Fig. 7 – Gate Charge

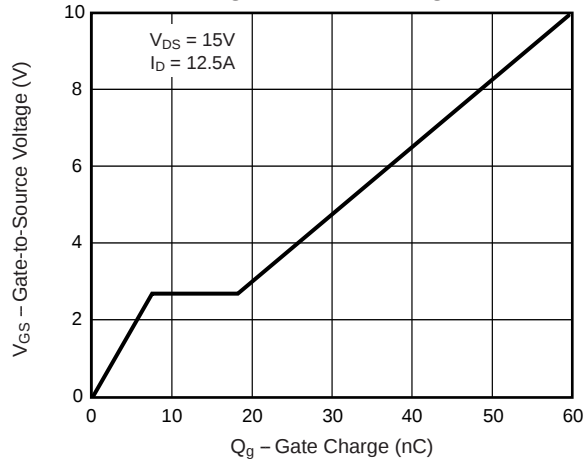
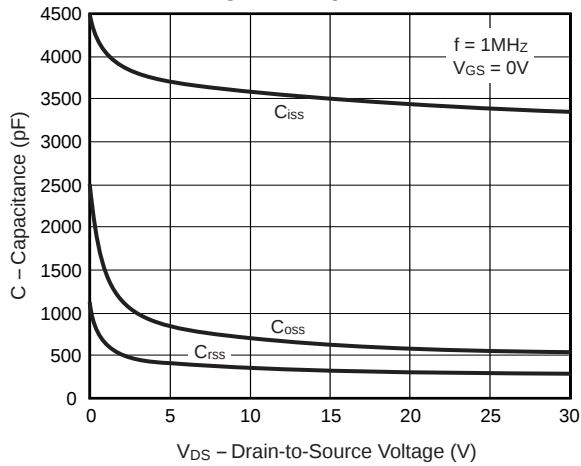
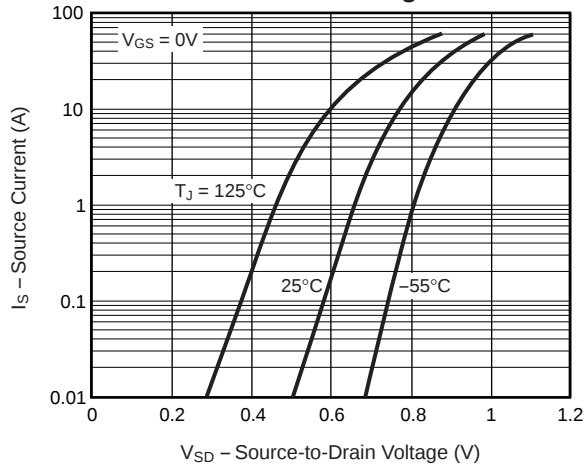


Fig. 8 – Capacitance



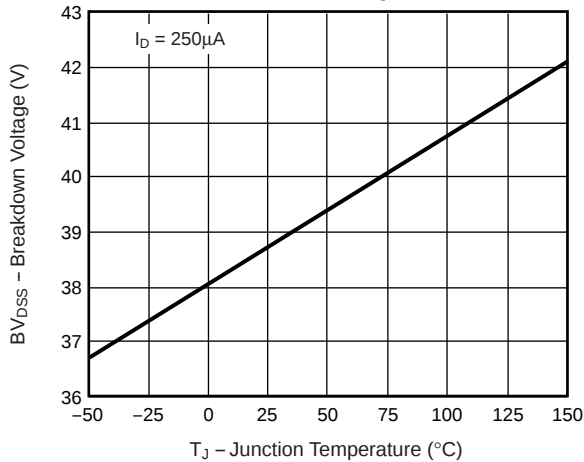
**Fig. 9 – Source-Drain Diode
Forward Voltage**



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

**Fig. 10 – Breakdown Voltage
vs. Junction Temperature**



**Fig. 11 – Transient Thermal
Impedance**

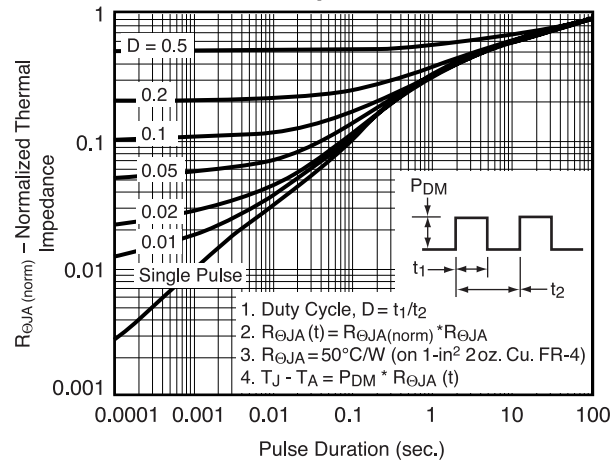


Fig. 12 – Power vs. Pulse Duration

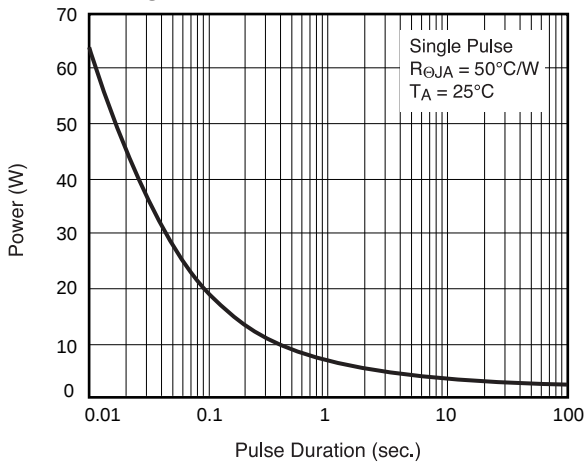


Fig. 13 – Maximum Safe Operating Area

