

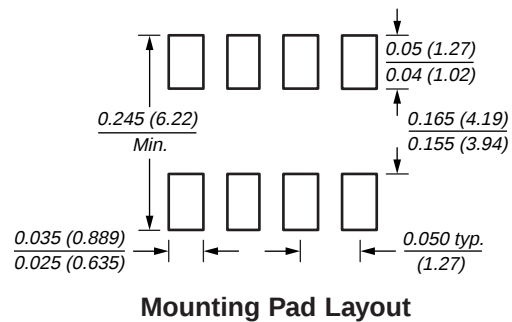
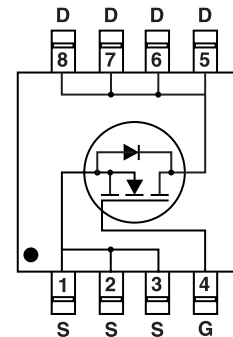
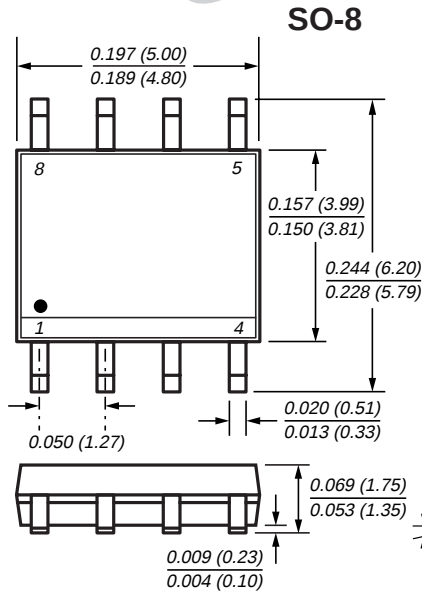


N-Channel Enhancement-Mode MOSFET

V_{DS} 30V $R_{DS(ON)}$ 18.5m Ω I_D 9A

TRENCH
GENFET®

New Product



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 25	
Continuous Drain Current $T_J = 150^\circ\text{C}^{(1)}$	I_D	9	A
$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$		7	
Pulsed Drain Current	I_{DM}	40	
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.

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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

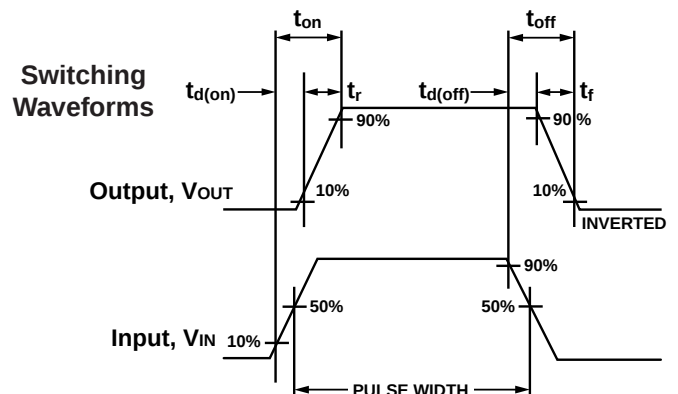
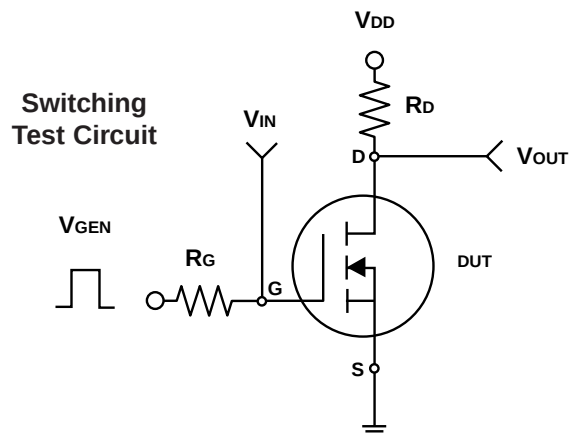
Dynamic

Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 5V, I _D = 9A	–	10.5	13	nC
Gate-Source Charge	Q _{gs}	V _{DS} = 15V, I _D = 9A V _{GS} = 10V	–	20.5	28	
Gate-Drain Charge	Q _{gd}		–	3.5	–	
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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 – Output Characteristics

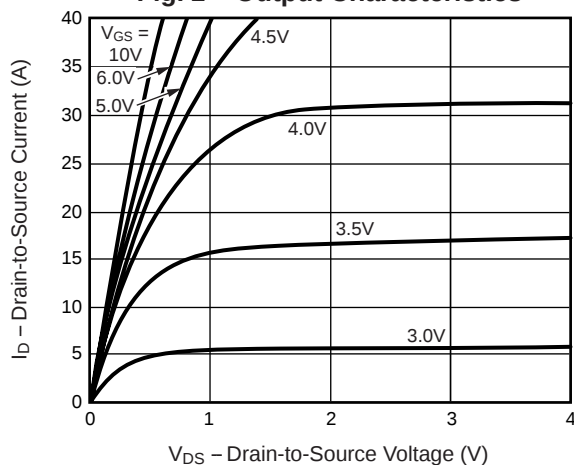
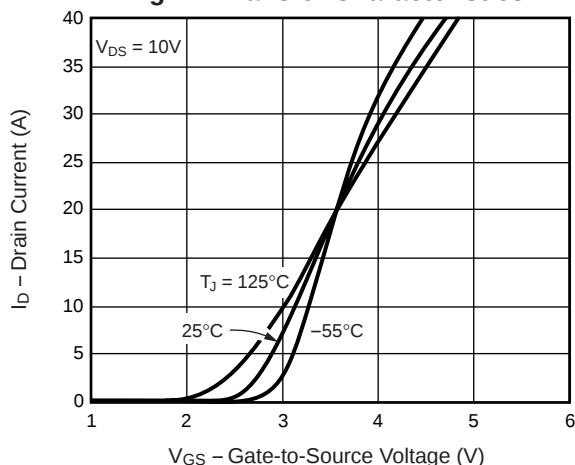
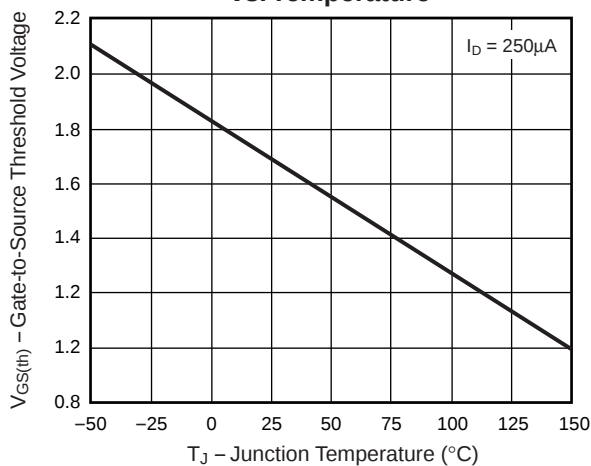


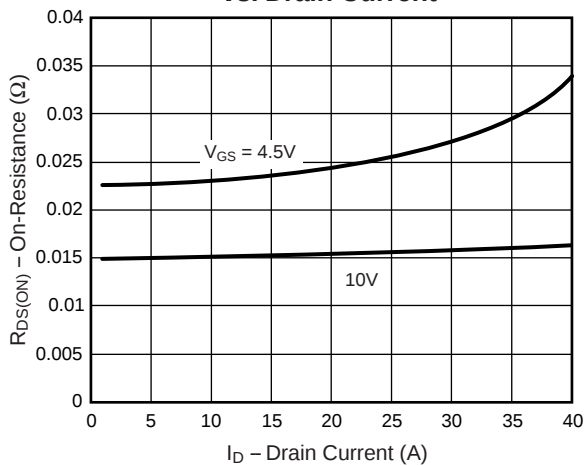
Fig. 2 – Transfer Characteristics



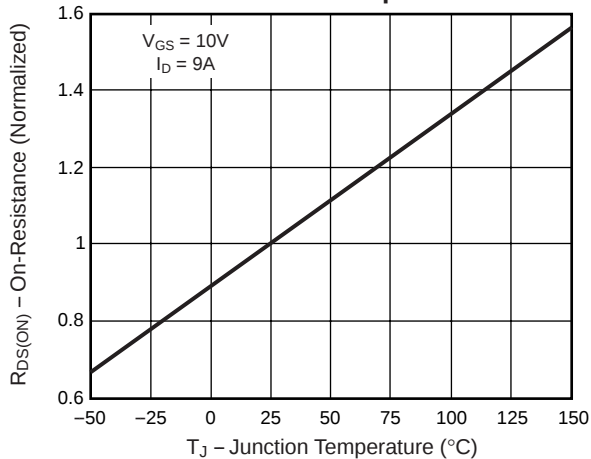
**Fig. 3 – Threshold Voltage
vs. Temperature**



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



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



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

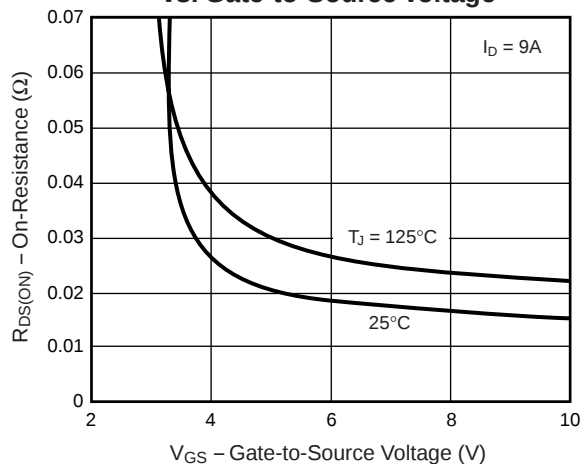


Fig. 7 – Gate Charge

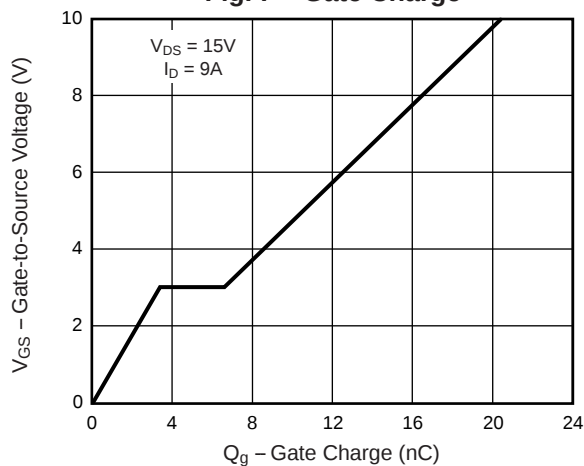
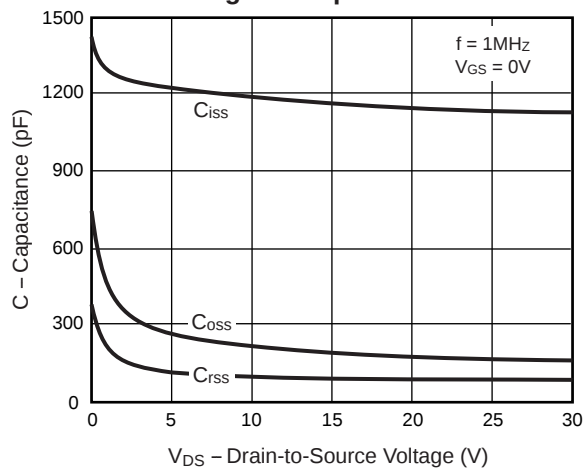
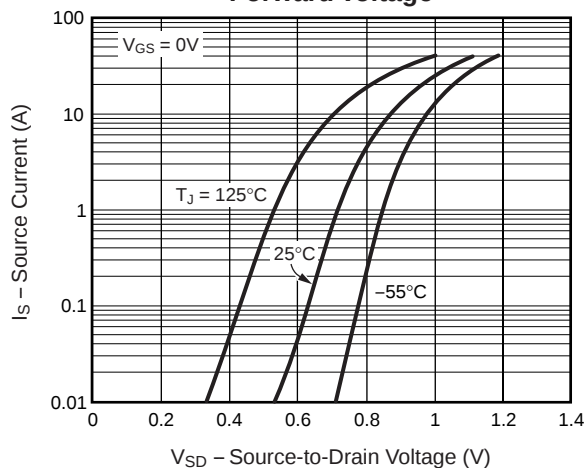


Fig. 8 – Capacitance



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



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Fig. 10 – Breakdown Voltage vs. Junction Temperature

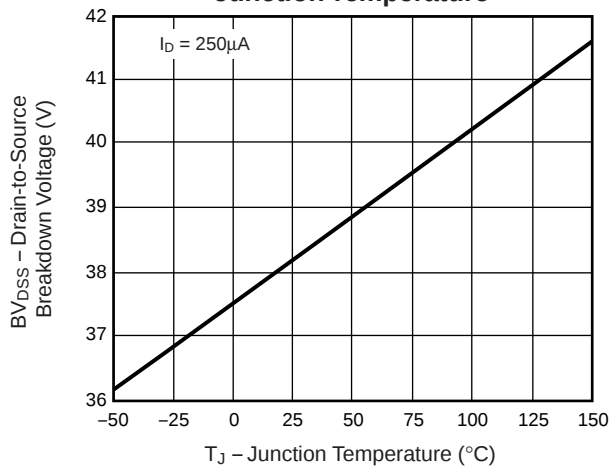


Fig. 11 – Transient Thermal Impedance

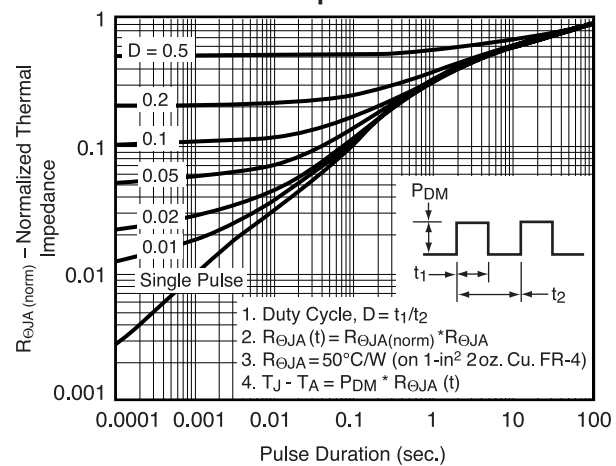


Fig. 12 – Power vs. Pulse Duration

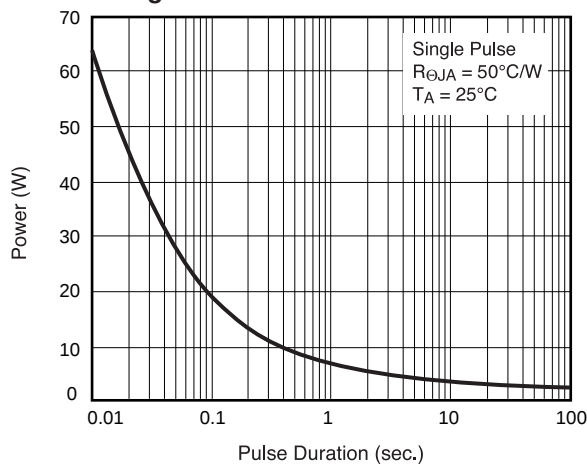


Fig. 13 – Maximum Safe Operating Area

