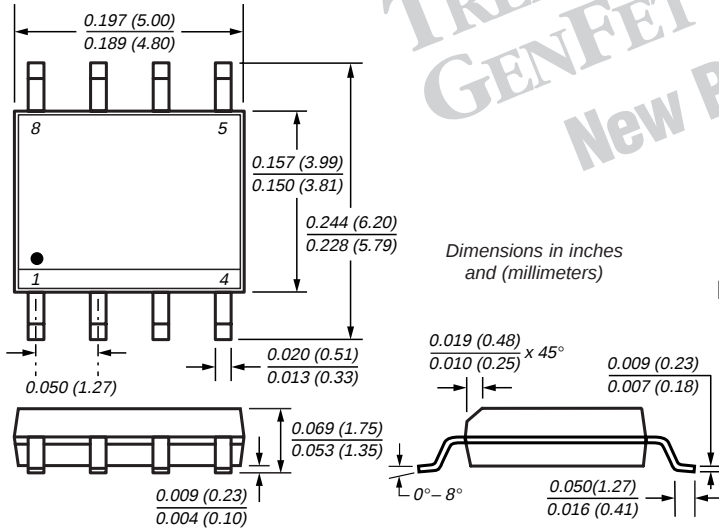


N-Channel MOSFET & Schottky Diode

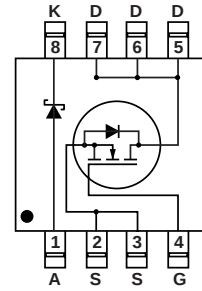
MOSFET: V_{DS} 30V $R_{DS(ON)}$ 13.5m Ω I_D 10A

Schottky: V_R 30V V_F 0.53V I_F 4.0A

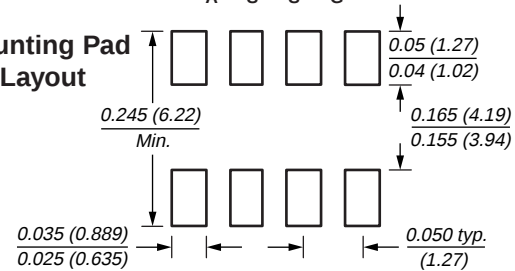
SO-8



**TRENCH
GENFET®**
New Product



Mounting Pad Layout



Mechanical Data

Case: SO-8 molded plastic body

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

Mounting Position: Any

Weight: 0.5g

Features

- Enhancement mode MOSFET and Schottky Diode in a compact package
- Advanced Trench Process Technology and high Density Cell Design for Ultra Low On-Resistance
- Suitable for Low Voltage DC/DC Converters
- High performance Schottky diode with low V_F and high I_F

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

MOSFET

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	10 8	A
Pulsed Drain Current	I_{DM}	50	
Continuous Source Current (MOSFET Diode Conduction) ⁽¹⁾	I_S	2.3	W
Maximum Power Dissipation ⁽¹⁾	P_D	2.3 1.5	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Maximum Thermal Resistance Junction-to-Ambient ⁽¹⁾	$R_{\theta JA}$	55	$^\circ\text{C/W}$

Schottky

Reverse Voltage	V_R	30	V
Maximum Power Dissipation ⁽¹⁾	P_D	1.4 0.9	W
Average Forward Current ⁽¹⁾	I_F	4.0	A
Pulsed Forward Current	I_{FM}	50	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Maximum Thermal Resistance Junction-to-Ambient ⁽¹⁾	$R_{\theta JA}$	90	$^\circ\text{C/W}$

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

N-Channel MOSFET With Schottky Diode

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

MOSFET

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	–	–	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 ⁽¹⁾	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} = 10V	20	–	–	A
Drain-Source On-State Resistance ⁽¹⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 10A	–	11.5	13.5	mΩ
		V _{GS} = 4.5V, I _D = 5A	–	15.5	20	
Forward Transconductance ⁽¹⁾	g _{fs}	V _{DS} = 15V, I _D = 10A	–	28	–	S
Diode Forward Voltage ⁽¹⁾	V _{SD}	I _S = 2.3A, V _{GS} = 0V	–	0.75	1.1	V

Dynamic

Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 5V, I _D = 10A	–	20	30	nC
Gate-Source Charge	Q _{gs}		–	5	–	
Gate-Drain Charge	Q _{gd}		–	7	–	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, R _L = 15Ω I _D ≅ 1A, V _{GEN} =10V, R _G =6Ω	–	10	30	ns
Rise Time	t _r		–	9	15	
Turn-Off Delay Time	t _{d(off)}		–	47	90	
Fall Time	t _f		–	13	40	
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz	–	1850	–	pF
Output Capacitance	C _{oss}		–	315	–	
Reverse Transfer Capacitance	C _{rss}		–	150	–	

Schottky

Diode Forward Voltage ⁽¹⁾	V _F	I _F = 3.0A	–	0.495	0.53	V
		I _F = 2.3A, T _J = 125°C	–	0.420	0.47	
Reverse Leakage Current	I _R	V _R = 30V	–	0.015	0.100	mA
		V _R = 30V, T _J = 125°C	–	6.5	20	

Notes:

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

N-Channel MOSFET With Schottky Diode

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

Fig. 1 – Output Characteristics

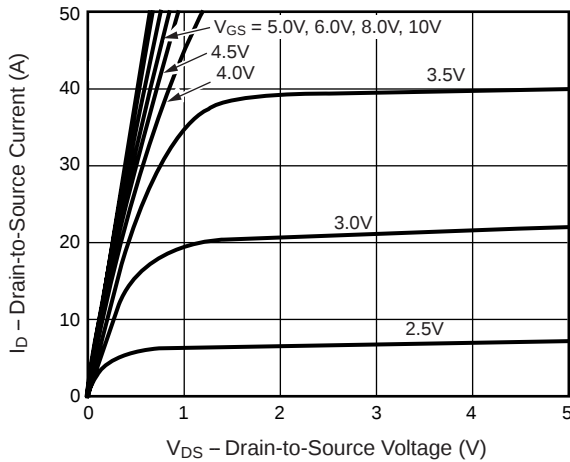
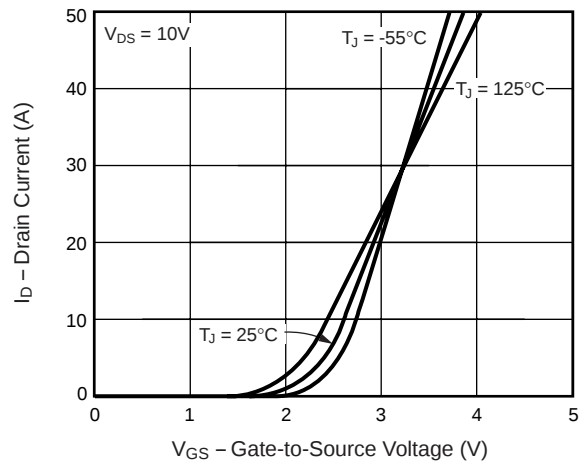
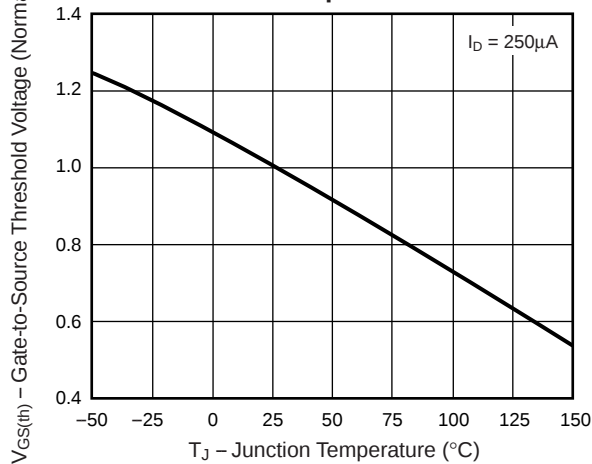


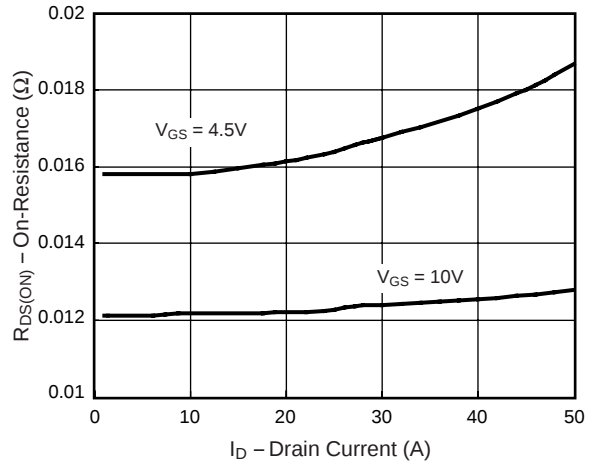
Fig. 2 – Transfer Characteristics



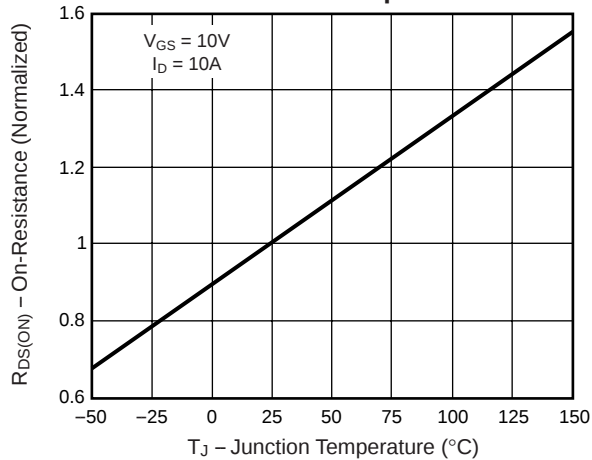
**Fig. 3 – Threshold Voltage
vs. Temperature**



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



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



N-Channel MOSFET With Schottky Diode

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

N-Channel MOSFET With Schottky Diode

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