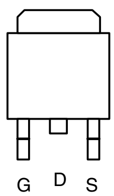
N-Channel 75 V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ.)
75	0.007 at V_{GS} = 10 V	110[d]	69

TO-263



Top View

Ordering Information: SUM110N08-07P-E3 (Lead (Pb)-free)

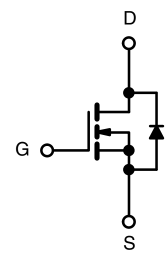
FEATURES

- TrenchFET® Power MOSFETS
- 100 % R_g and UIS Tested
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

APPLICATIONS

- Synchronous Rectification



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C, unless otherwise noted)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	75	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 150 °C)	T_C = 25 °C	I_D	110[d]	A
	T_C = 70 °C		103	
Pulsed Drain Current		I_{DM}	180	
Avalanche Current		I_{AS}	50	
Single Avalanche Energy[a]	L = 0.1 mH	E_{AS}	125	mJ
Maximum Power Dissipation[a]	T_C = 25 °C	P_D	208.3[b]	W
	T_A = 25 °C[c]		3.75	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Limit	Unit
Junction-to-Ambient (PCB Mount)[c]	R_{thJA}	40	°C/W
Junction-to-Case (Drain)	R_{thJC}	0.6	

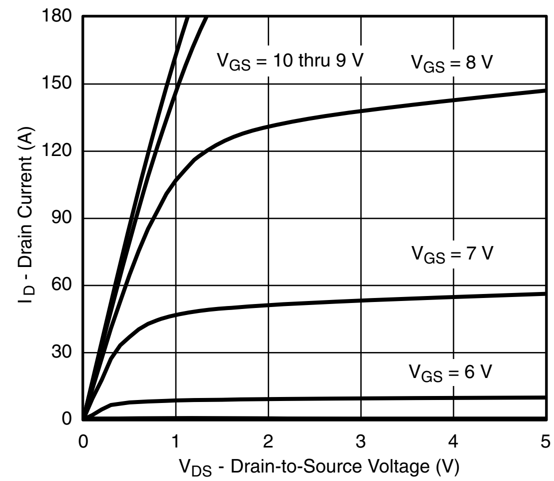
Notes:
a. Duty cycle ≤ 1 %.
b. See SOA curve for voltage derating.
c. When mounted on 1" square PCB (FR-4 material).
d. Package limited.

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{DS} = 0 V, I_D = 250 µA	75			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	2.5		4.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 75 V, V_{GS} = 0 V			1	µA
		V_{DS} = 75 V, V_{GS} = 0 V, T_J = 125 °C			50	
		V_{DS} = 75 V, V_{GS} = 0 V, T_J = 150 °C			250	
On-State Drain Current[a]	$I_{D(on)}$	$V_{DS} \geq$ 10 V, V_{GS} = 10 V	70			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A		0.0057	0.0070	Ω
		V_{GS} = 10 V, I_D = 20 A, T_J = 125 °C		0.0092	0.0112	
Forward Transconductance[a]	g_{fs}	V_{DS} = 15 V, I_D = 20 A		43		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 30 V, f = 1 MHz		4250		pF
Output Capacitance	C_{oss}			580		
Reverse Transfer Capacitance	C_{rss}			230		
Total Gate Charge[c]	Q_g	V_{DS} = 30 V, V_{GS} = 10 V, I_D = 50 A		69	105	nC
Gate-Source Charge[c]	Q_{gs}			23		
Gate-Drain Charge[c]	Q_{gd}			21		
Gate Resistance	R_g	f = 1 MHz		1.2	2.4	Ω
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = 30 V, R_L = 0.6 Ω $I_D \cong$ 50 A, V_{GEN} = 10 V, R_g = 1 Ω		17	30	ns
Rise Time[c]	t_r			5	10	
Turn-Off Delay Time[c]	$t_{d(off)}$			22	40	
Fall Time[c]	t_f			6	15	
Source-Drain Diode Ratings and Characteristics T_C = 25 °C[b]						
Continuous Current	I_S				110	A
Pulsed Current	I_{SM}				180	
Forward Voltage[a]	V_{SD}	I_F = 20 A, V_{GS} = 0 V		0.83	1.5	V
Reverse Recovery Time	t_{rr}	I_F = 75 A, dI/dt = 100 A/µs		65	100	ns
Peak Reverse Recovery Current	$I_{RM(REC)}$			2.5	5	A
Reverse Recovery Charge	Q_{rr}			85	150	nC

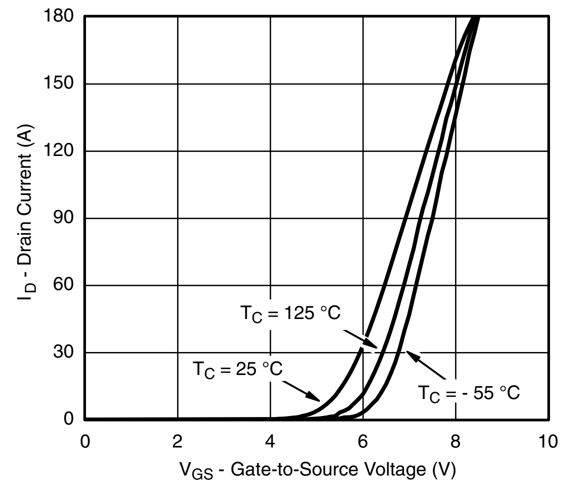
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.
c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

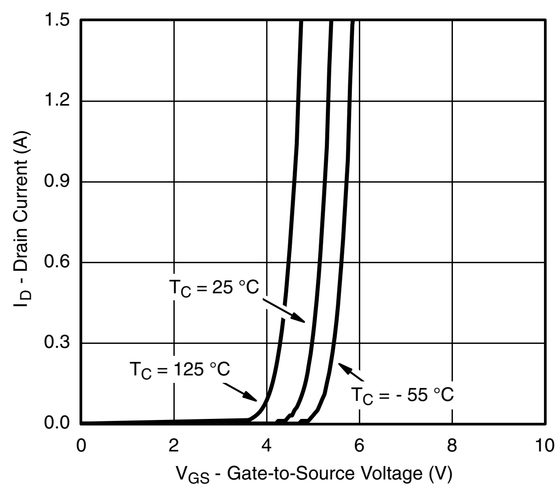
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



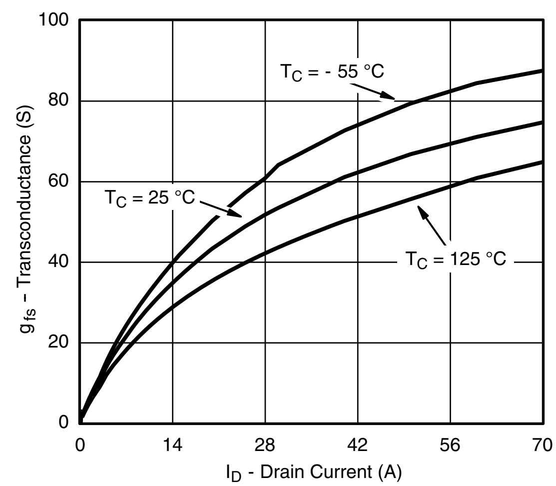
Output Characteristics



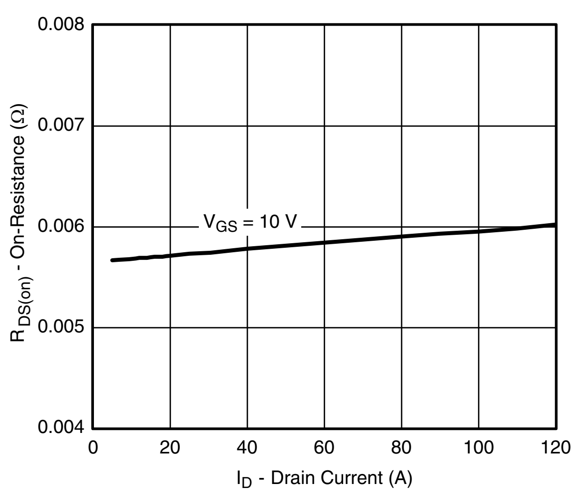
Transfer Characteristics



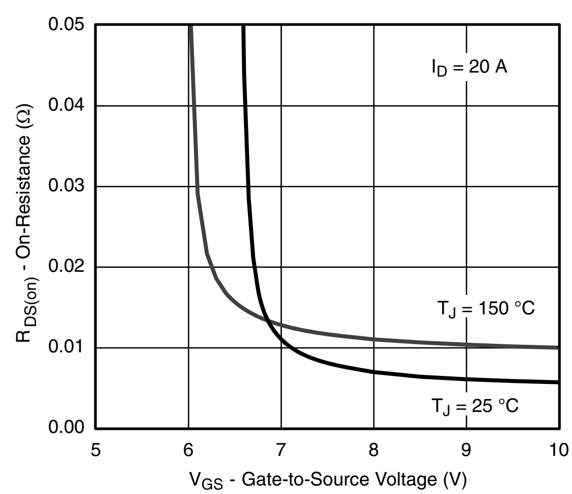
Transfer Characteristics



Transconductance

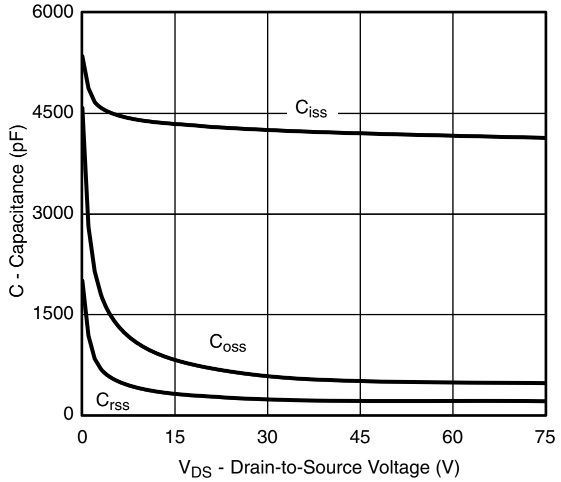


On-Resistance vs. Drain Current

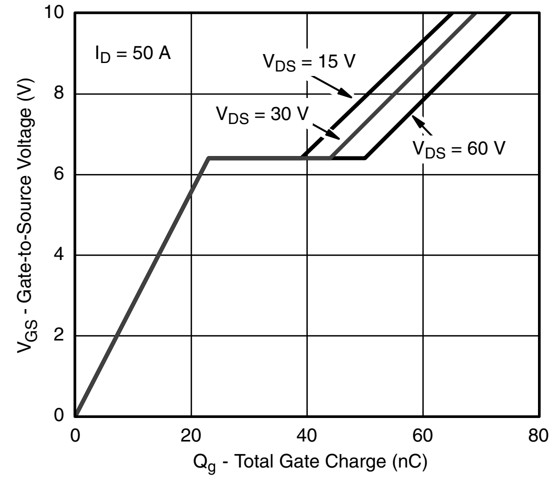


On-Resistance vs. Gate-to-Source Voltage

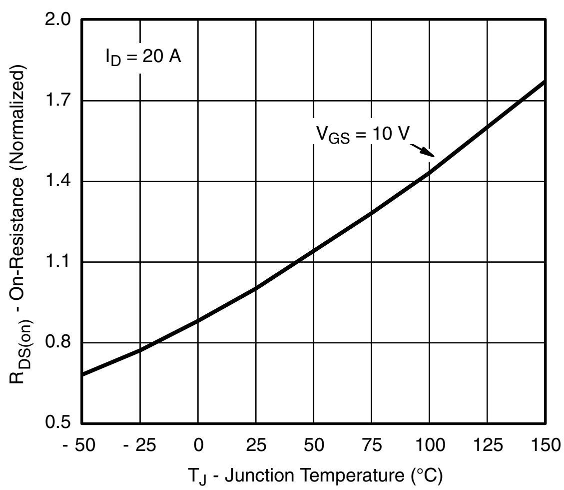
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



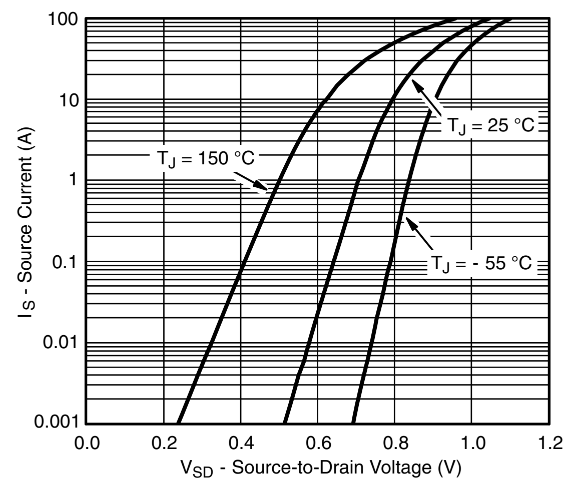
Capacitance



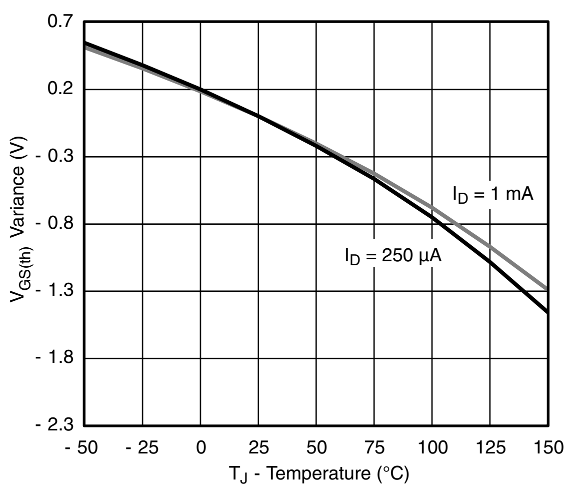
Gate Charge



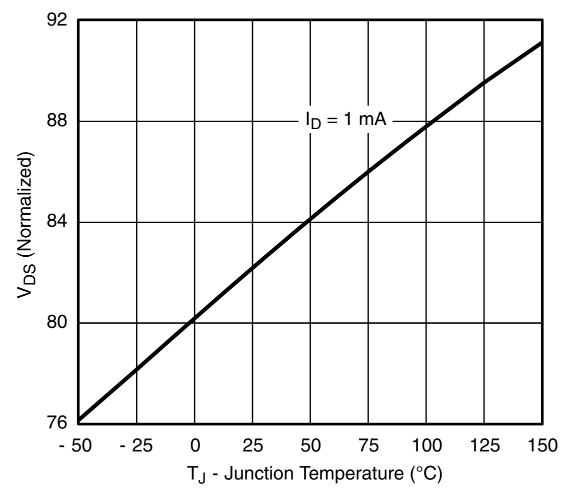
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



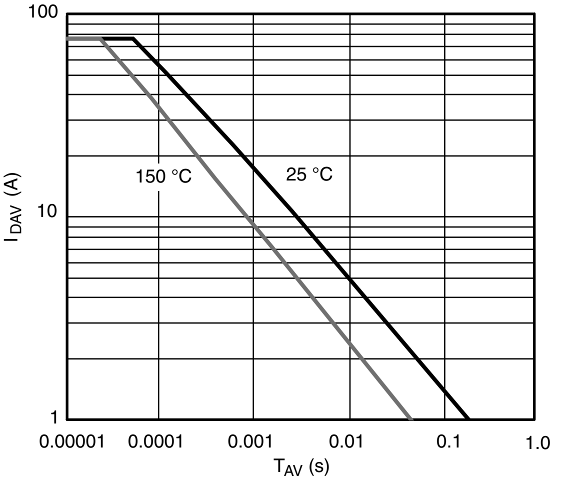
Threshold Voltage



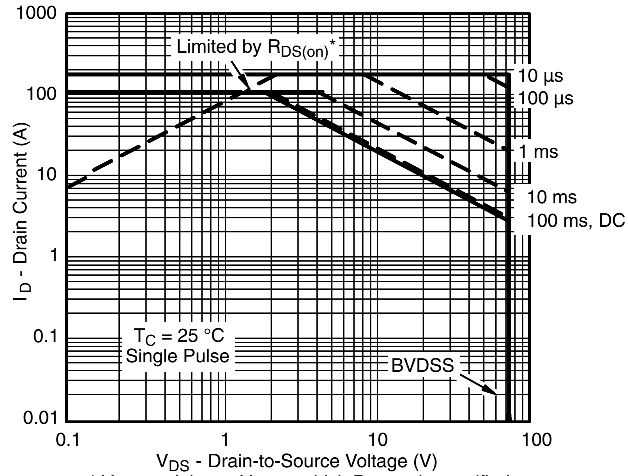
Drain Source Breakdown vs. Junction Temperature

For technical questions, contact: pmostechsupport@vishay.com

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

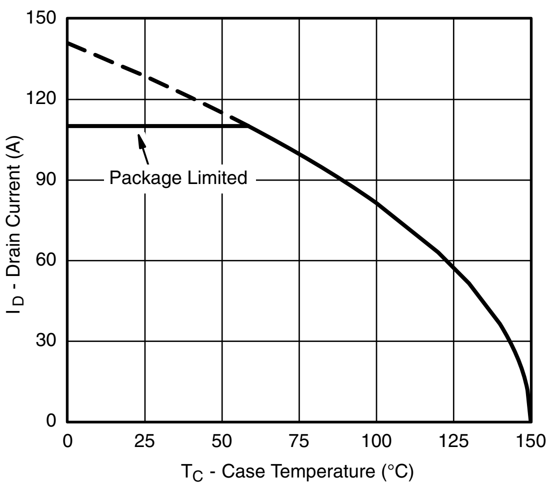


Single Pulse Avalanche Current Capability vs. Time



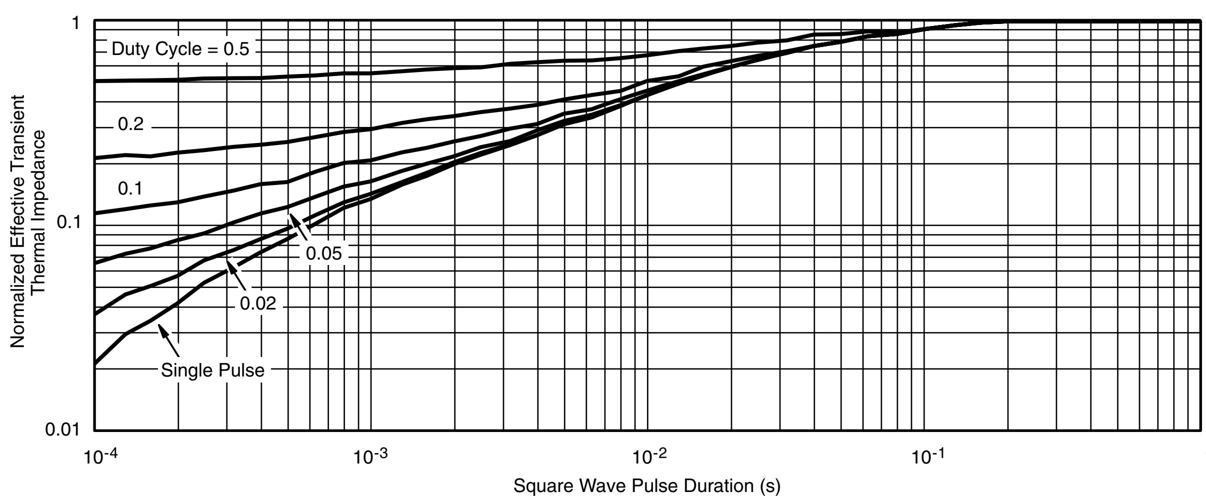
* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Case



Current Derating*, Junction-to-Case

* The power dissipation P_D is based on $T_{J(max)}$ = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.



Normalized Thermal Transient Impedance, Junction-to-Case

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