

N-Channel 75-V (D-S) MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
75	0.0062 at $V_{GS} = 10$ V	90 ^d	75

FEATURES

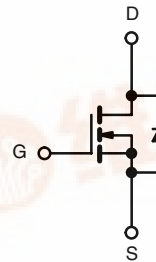
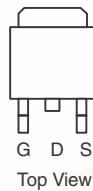
- TrenchFET[®] Power MOSFETS
- 175 °C Junction Temperature
- 100 % R_g and UIS Tested



APPLICATIONS

- Power Supply
 - Secondary Synchronous Rectification
- Industrial

TO-263



N-Channel MOSFET

Ordering Information: SUM90N08-6m2P-E3 (Lead (Pb)-free)

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	V
Continuous Drain Current ($T_J = 175$ °C)	I_D	$T_C = 25$ °C	A
		$T_C = 70$ °C	
Pulsed Drain Current	I_{DM}	240	
Avalanche Current	I_{AS}	50	
Single Avalanche Energy ^a	E_{AS}	125	mJ
Maximum Power Dissipation ^a	P_D	$T_C = 25$ °C	W
		$T_A = 25$ °C ^c	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 175	°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}	0.55	

Notes:

- Duty cycle ≤ 1 %.
- See SOA curve for voltage derating.
- When Mounted on 1" square PCB (FR-4 material).
- Package limited.

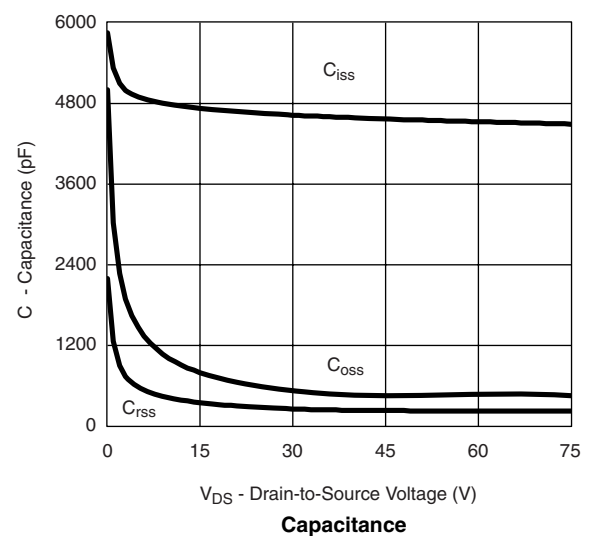
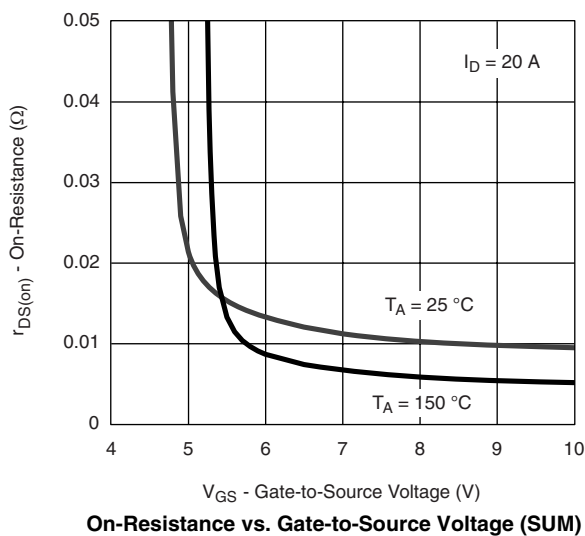
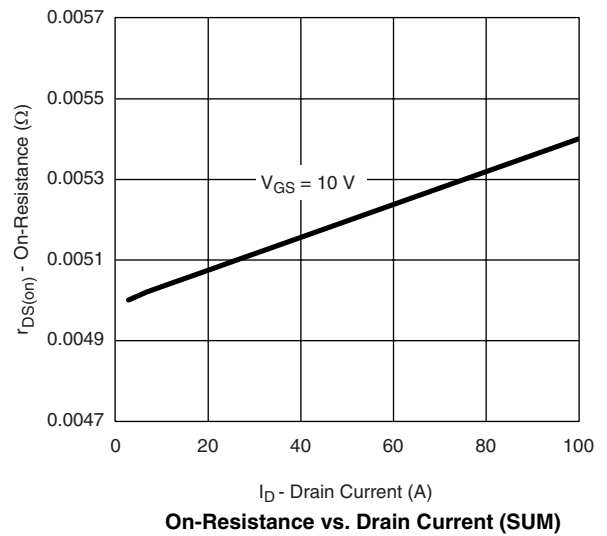
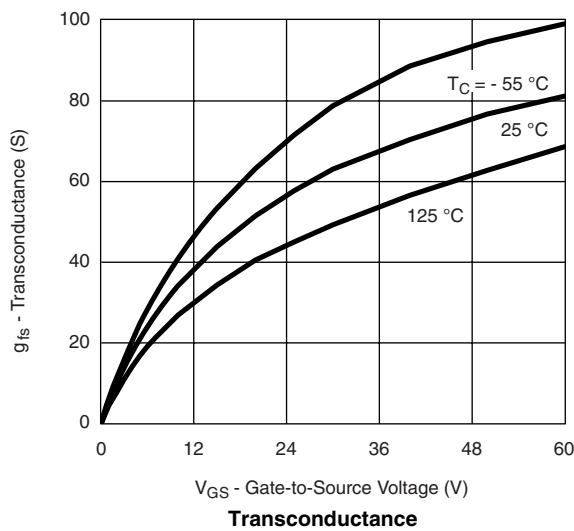
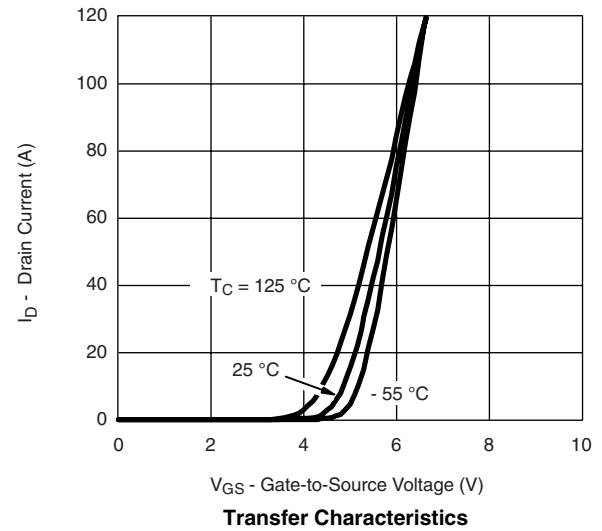
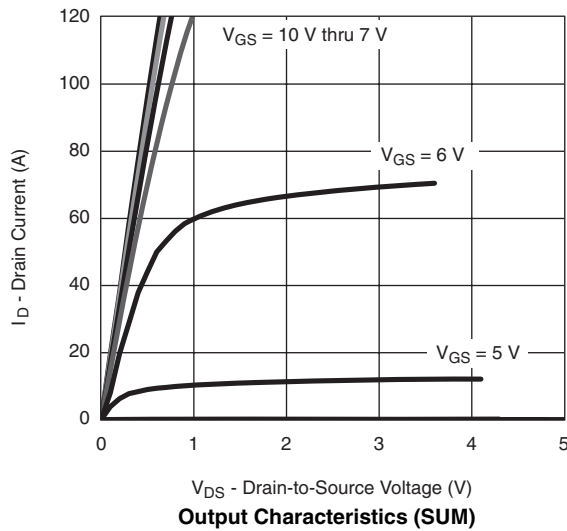


SPECIFICATIONS T _J = 25 °C, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{DS} = 0 V, I _D = 250 μA	75			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.5		4.5	
Gate-Body Leakage	I _{GSS}	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} ≥ 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		0.0051	0.0062	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C		0.0082	0.0105	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 20 A		50		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 30 V, f = 1 MHz		4620		pF
Output Capacitance	C _{oss}			517		
Reverse Transfer Capacitance	C _{rss}			247		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 50 A		75	115	nC
Gate-Source Charge ^c	Q _{gs}			25.5		
Gate-Drain Charge ^c	Q _{gd}			20		
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 ≅ 50 A, V _{GEN} = 10 V, R _g = 1 Ω		16	30	ns
Rise Time ^c	t _r			11	20	
Turn-Off Delay Time ^c	t _{d(off)}			24	40	
Fall Time ^c	t _f			10	20	
Source-Drain Diode Ratings and Characteristics T _C = 25 °C ^b						
Continuous Current	I _S				85	A
Pulsed Current	I _{SM}				240	
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		60	100	ns
Peak Reverse Recovery Current	I _{RM(REC)}			3.3	5	A
Reverse Recovery Charge	Q _{rr}				100	150

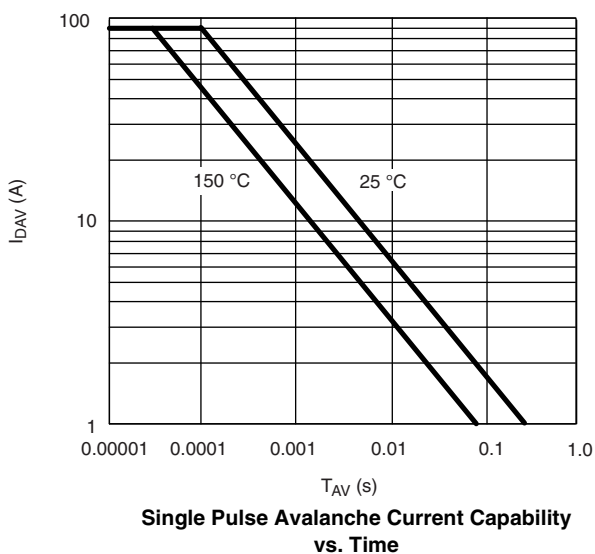
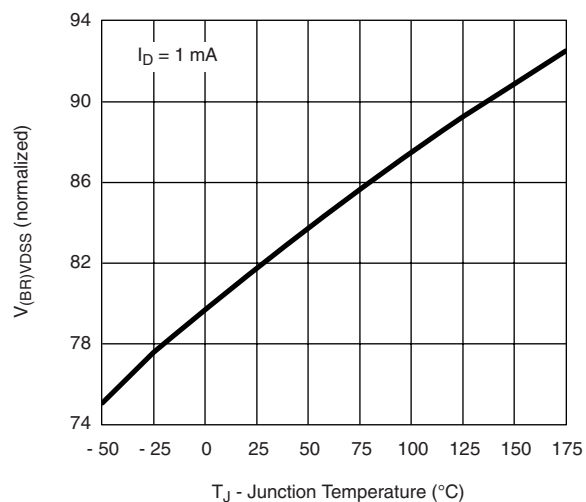
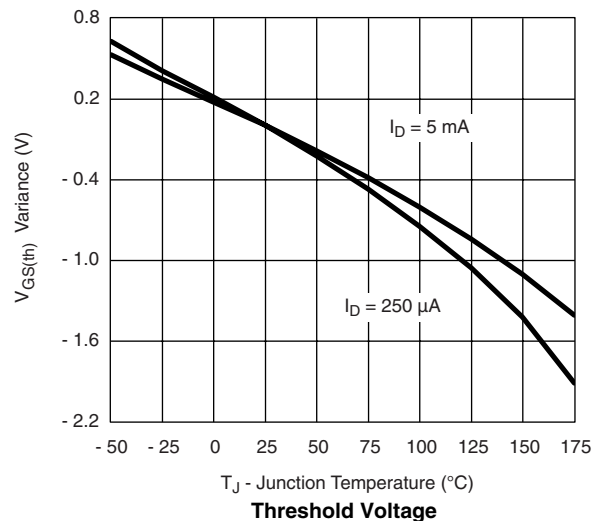
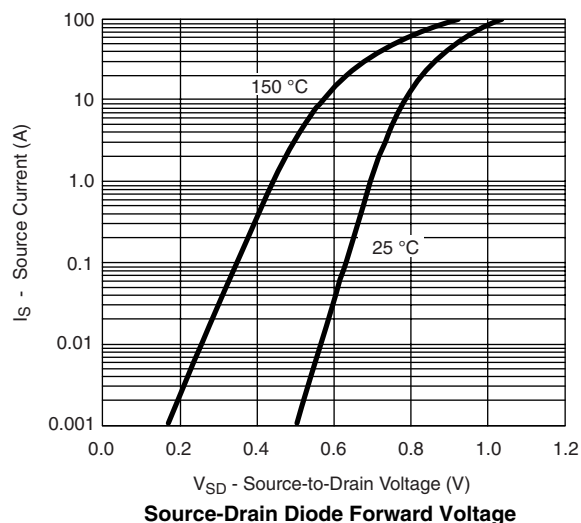
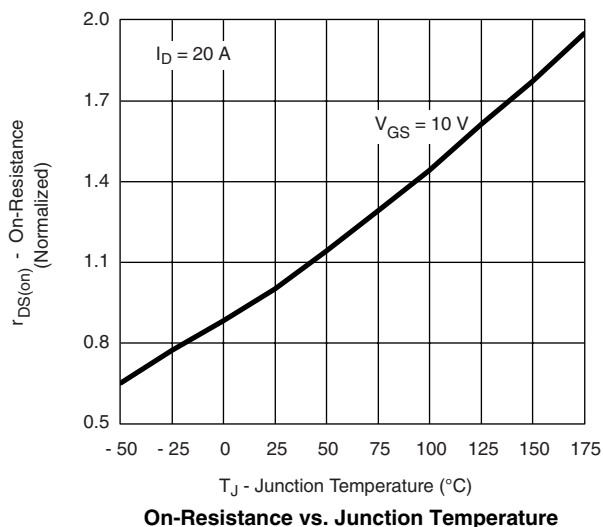
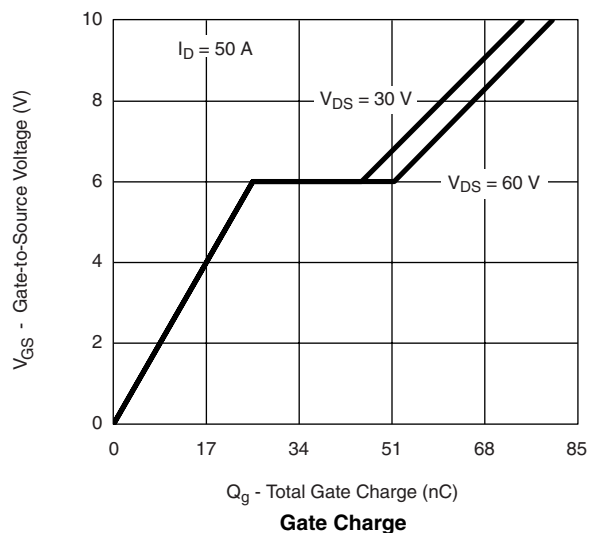
Notes:

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
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


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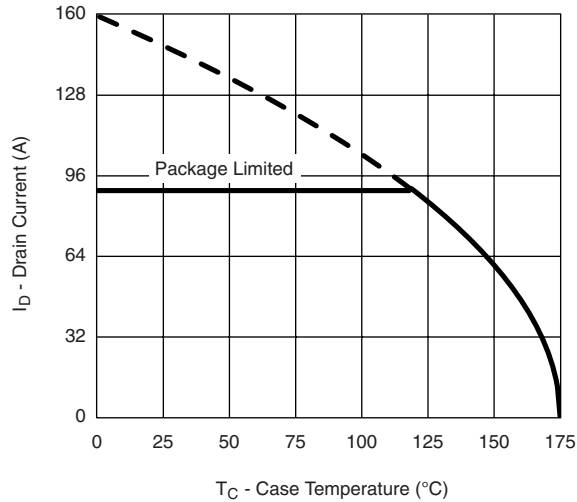
VISHAY

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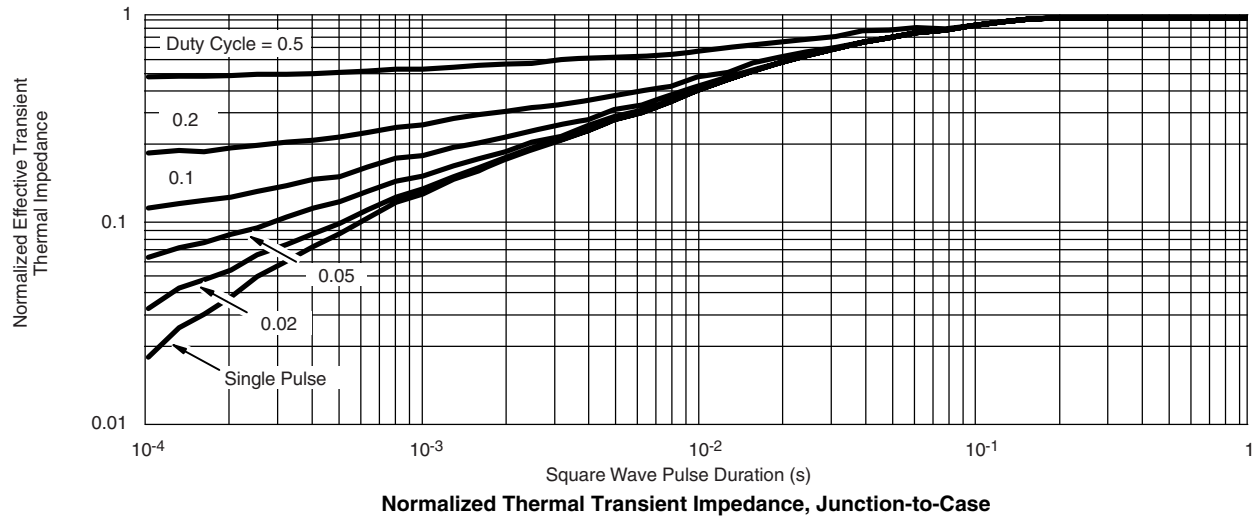
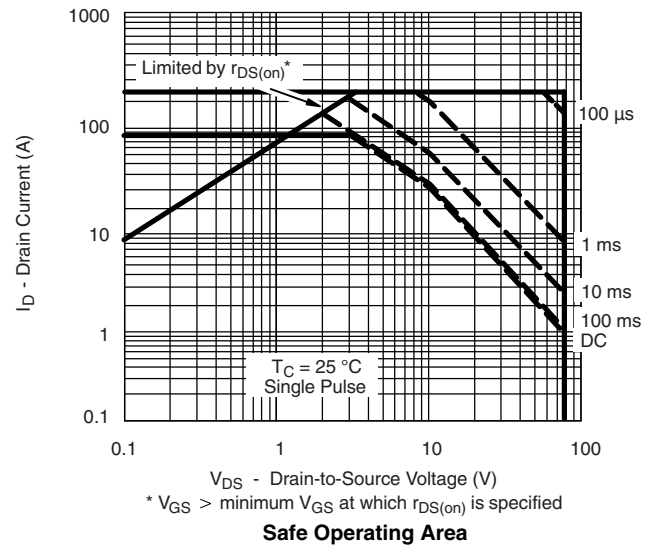
SUM90N08-6m2P

Vishay Siliconix

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Maximum Drain Current vs. Case Temperature (SUM)



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see <http://www.vishay.com/ppg?69552>.

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