

Vishay Siliconix

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

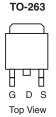
PRODUCT SUMMARY			
V _{(BR)DSS} (V)	R_{DS(on)} (Ω)	I _D (A)	Q _g (Typ.)
75	0.0076 at V_{GS} = 10 V	90 ^d	58

FEATURES

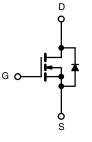
- TrenchFET[®] Power MOSFETS
- 175 °C Junction Temperature
- 100 % R_q and UIS Tested

APPLICATIONS

- Power Supply - Secondary Synchronous Rectification
- Industrial



Ordering Information: SUM90N08-7m6P-E3 (Lead (Pb)-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATING	S T _C = 25 °C, unless oth	erwise noted			
Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		V _{DS}	75	V	
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current (T _J = 175 °C)	T _C = 25 °C	L	90 ^d	A	
	T _C = 70 °C	I _D	81		
Pulsed Drain Current		I _{DM}	200	A	
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	Р	150 ^b	w	
	T _A = 25 °C ^c	– P _D –	3.75		
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}	1		

Notes:

a. Duty cycle \leq 1 %.

b. See SOA curve for voltage derating.

c. When Mounted on 1" square PCB (FR-4 material).

d. Package limited.



SUM90N08-7m6P

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Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit
Static				•		
Drain-Source Breakdown Voltage	V _{(BR)DSS}	$V_{GS} = 0 V$, $I_D = 250 \mu A$	75			v
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \ \mu A$	2.8		4.8	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 250	nA
Zero Gate Voltage Drain Current		$V_{DS} = 75 \text{ V}, V_{GS} = 0 \text{ V}$			1	
	I _{DSS}	$V_{DS} = 75 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 125 ^{\circ}\text{C}$			50	μA
		$V_{DS} = 75 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 150 ^{\circ}\text{C}$			250	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 10 \text{ V}, \text{ V}_{GS} = 10 \text{ V}$	70			Α
	Б	$V_{GS} = 10 \text{ V}, I_D = 30 \text{ A}$		0.0063	0.0076	Ω
Drain-Source On-State Resistance ^a	R _{DS(on)}	V_{GS} = 10 V, I_D = 30 A, T_J = 125 °C		0.0108	0.0130	
Forward Transconductance ^a	9 _{fs}	$V_{DS} = 15 \text{ V}, \text{ I}_{D} = 30 \text{ A}$		55		S
Dynamic ^b						
Input Capacitance	C _{iss}			3528		pF
Output Capacitance	C _{oss}	V_{GS} = 0 V, V_{DS} = 30 V, f = 1 MHz		470		
Reverse Transfer Capacitance	C _{rss}			178		
Total Gate Charge ^c	Qg			58	90	nC
Gate-Source Charge ^c	Q _{gs}	V_{DS} = 38 V, V_{GS} = 10 V, I_D = 15 A		21		
Gate-Drain Charge ^c	Q _{gd}			16		
Gate Resistance	Rg	f = 1 MHz		1.8	3.5	Ω
Turn-On Delay Time ^c	t _{d(on)}			21	35	
Rise Time ^c	t _r	V_{DD} = 38 V, R_L = 3.1 Ω		15	25	ns
Turn-Off Delay Time ^c	t _{d(off)}	$\text{I}_\text{D}\cong$ 12.5 A, V_GEN = 10 V, R_g = 1 Ω		32	55	
Fall Time ^c	t _f			10	20	
Source-Drain Diode Ratings and Cha	aracteristics T	_C = 25 °C ^b			· ·	
Continuous Current	ا _S				83	^
Pulsed Current	I _{SM}				200	A
Forward Voltage ^a	V _{SD}	$I_F = 30 \text{ A}, V_{GS} = 0 \text{ V}$		0.85	1.5	V
Reverse Recovery Time	t _{rr}			61	100	ns
Peak Reverse Recovery Current	I _{RM(REC)}	I _F = 75 A, di/dt = 100 A/μs		2.7	4.5	Α
Reverse Recovery Charge	Q _{rr}			83	140	nC

Notes:

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

b. Guaranteed by design, not subject to production testing.

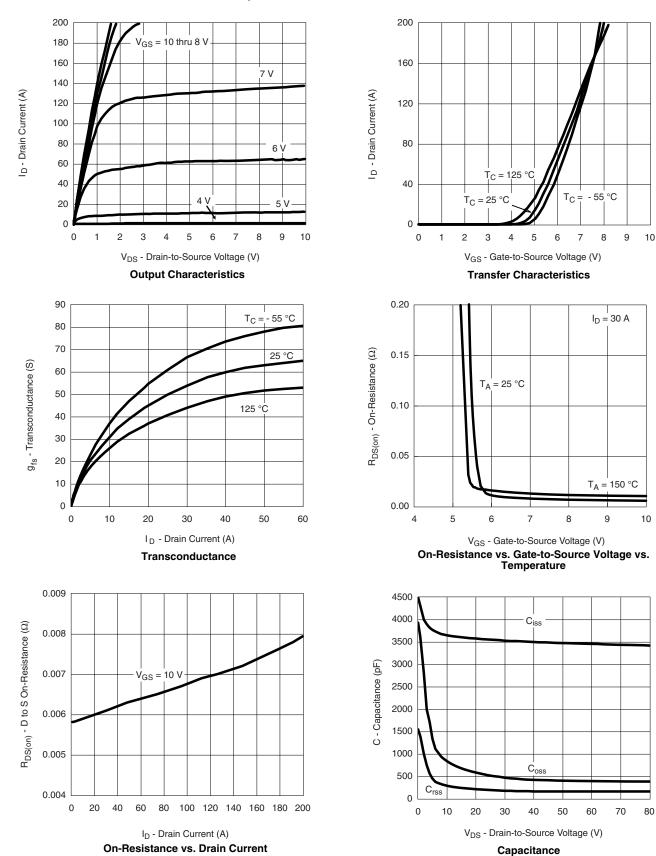
c. Independent of operating temperature.

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.



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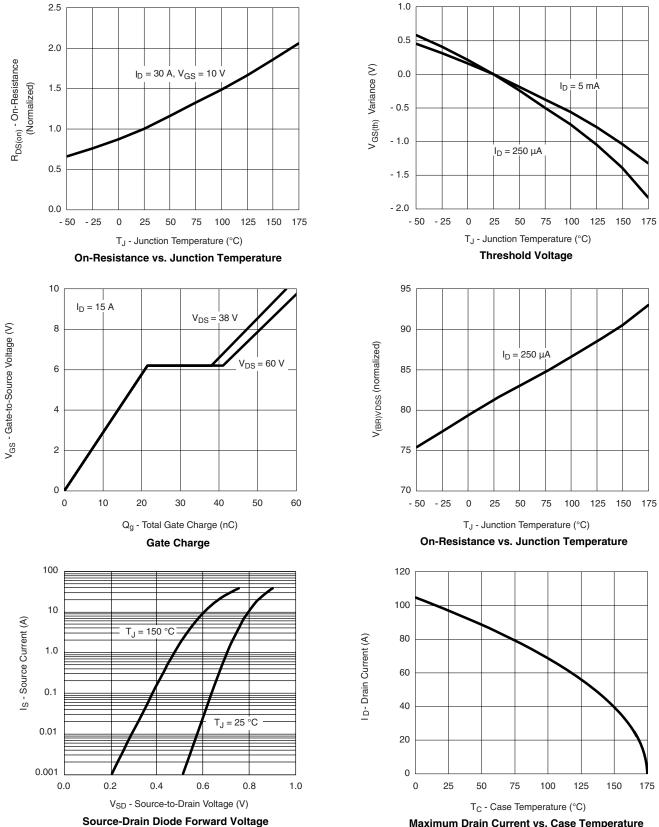
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

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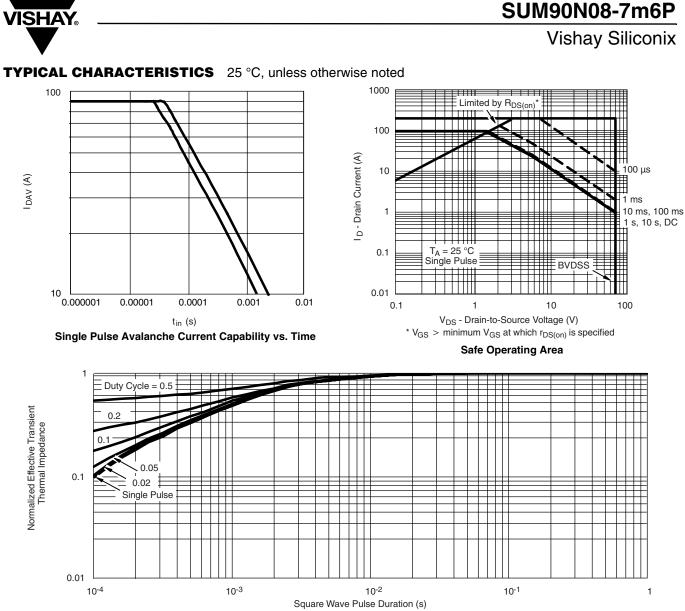
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125 150 175 T_C - Case Temperature (°C) Maximum Drain Current vs. Case Temperature

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125 150 175



Normalized Thermal Transient Impedance, Junction-to-Case

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