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

PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
75	0.010 at V_{GS} = 10 V	110

FEATURES

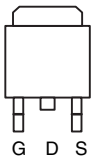
- TrenchFET® Power MOSFET
- New Low Thermal Resistance Package

Pb Available
RoHS* COMPLIANT

APPLICATIONS

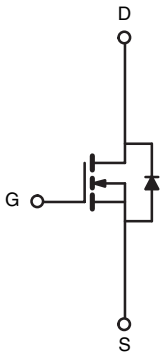
- Automotive
  - Boardnet 42-VEP and ABS
  - Motor Drives
- High Current
- DC/DC Converters

TO-263



Top View

Ordering Information: SUM110N08-10
SUM110N08-10-E3 (Lead (Pb)-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T_A = 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 = 175 °C)	T_C = 25 °C	I_D	110	A
	T_C = 125 °C		63[a]	
Pulsed Drain Current		I_{DM}	350	
Avalanche Current		I_{AR}	75	
Repetitive Avalanche Energy[a]	L = 0.1 mH	E_{AR}	280	mJ
Maximum Power Dissipation[a]	T_C = 25 °C	P_D	200[b]	W
	T_A = 25 °C[c]		3.7	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS				
Parameter		**Symbol**	**Limit**	**Unit**
Maximum Junction-to-Ambient	PCB Mount[c]	R_{thJA}	40	°C/W
Maximum Junction-to-Case		R_{thJC}	0.75	

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

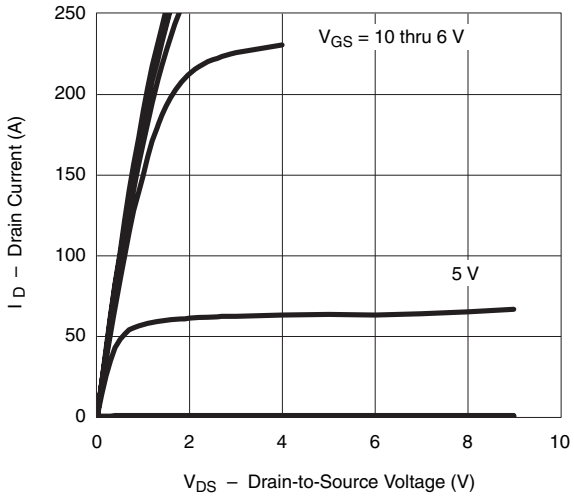
* Pb containing terminations are not RoHS compliant, exemptions may apply

SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Condition**	**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		4.0	
Gate Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 100	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 = 175 °C			250	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = ≥ 5 V, V_{GS} = 10 V	120			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 30 A		0.0055	0.010	Ω
		V_{GS} = 10 V, I_D = 30 A, T_J = 125 °C			0.0185	
		V_{GS} = 10 V, I_D = 30 A, T_J = 175 °C			0.0245	
Forward Transconductance	g_{fs}	V_{DS} = 15 V, I_D = 30 A	30			S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		5250		pF
Output Capacitance	C_{oss}			700		
Reverse Transfer Capacitance	C_{rss}			310		
Total Gate Charge[c]	Q_g	V_{DS} = 35 V, V_{GS} = 10 V, I_D = 110 A		90	165	nC
Gate-Source Charge[c]	Q_{gs}			24		
Gate-Drain Charge[c]	Q_{gd}			27		
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = 35 V, R_L = 0.4 Ω I_D ≅ 110 A, V_{GEN} = 10 V, R_g = 2.5 Ω		20	30	ns
Rise Time[c]	t_r			100	150	
Turn-Off DelayTime[c]	$t_{d(off)}$			45	70	
Fall Time[c]	t_f			75	115	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)[b]						
Continous Current	I_S				110	A
Pulsed Current	I_{SM}				350	
Forward Voltage[a]	V_{SD}	I_F = 110 A, V_{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t_{rr}	I_F = 85 A, di/dt = 100 A/µs		75	120	ns
Peak Reverse Recovery Current	$I_{RM(REC)}$			3.5	7	A
Reverse Recovery Charge	Q_{rr}			0.13	0.30	µC

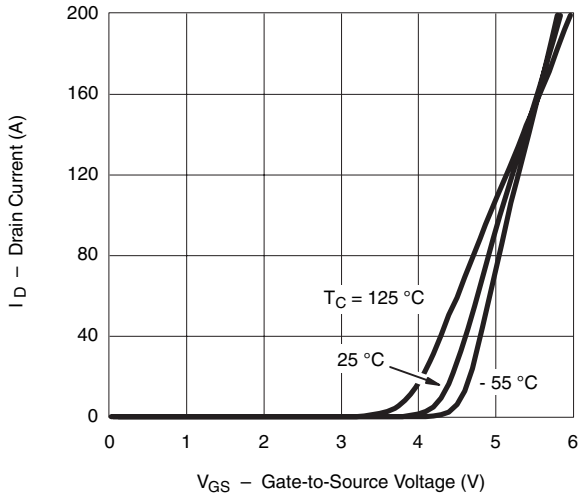
Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.
c. Independent of operating temperature.

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.

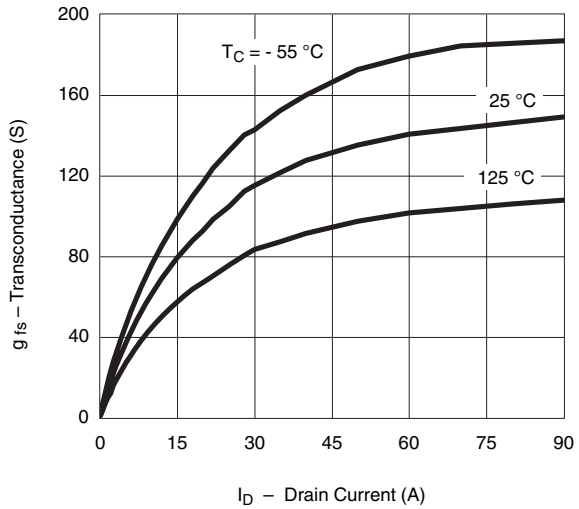
TYPICAL CHARACTERISTICS T_A = 25 °C, unless otherwise noted



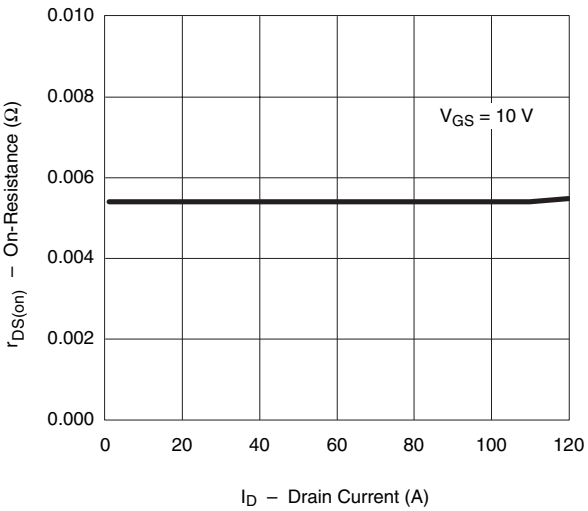
Output Characteristics



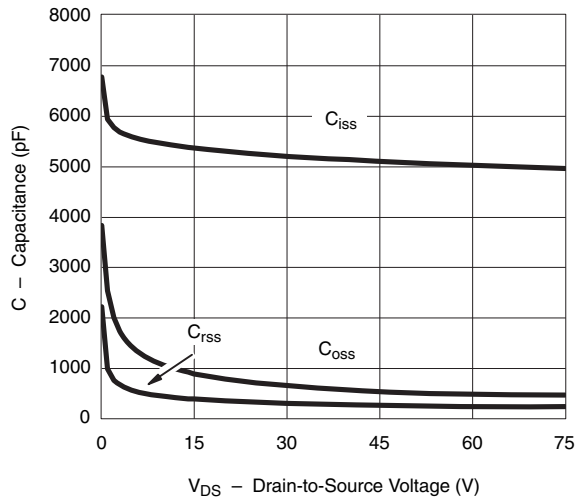
Transfer Characteristics



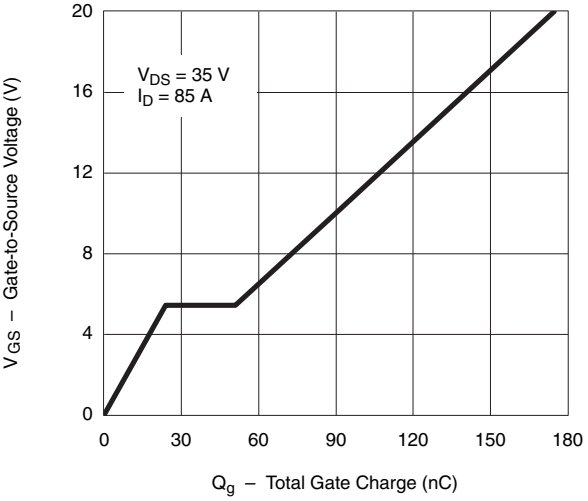
Transconductance



On-Resistance vs. Drain Current



Capacitance



Gate Charge

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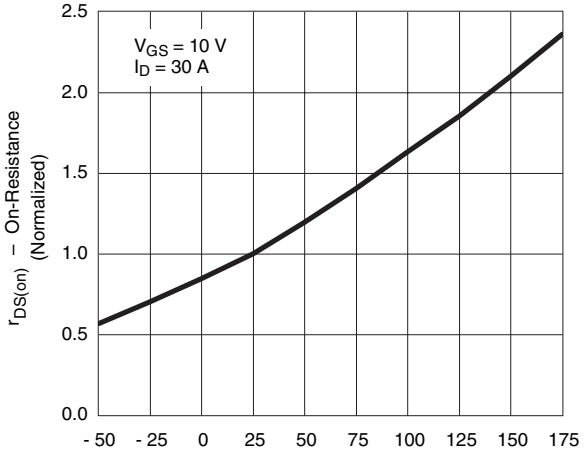
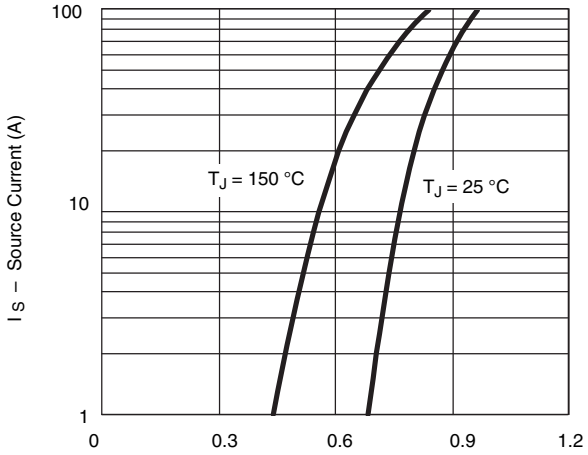
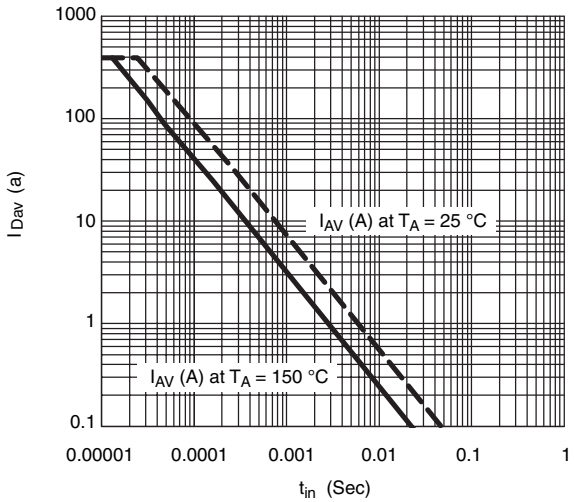


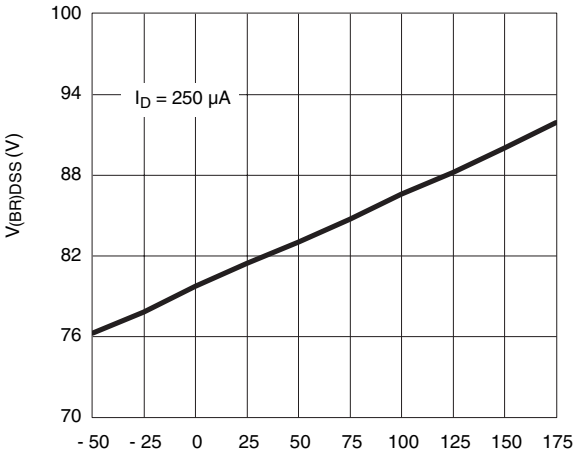
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

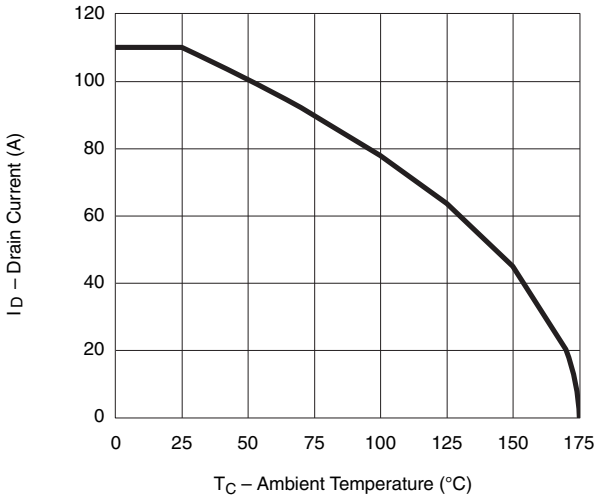


Avalanche Current vs. Time

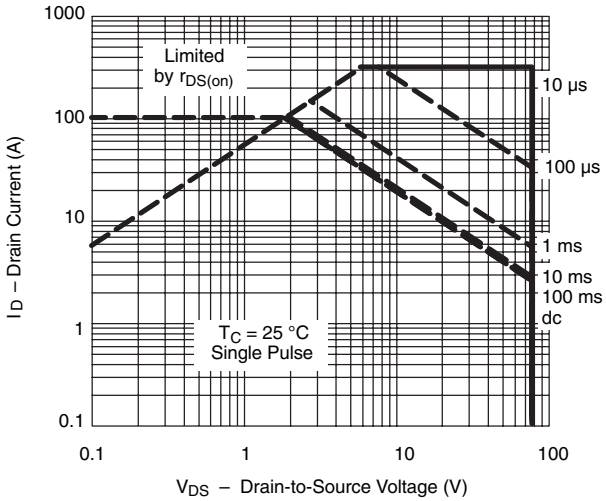


Drain Source Breakdown vs. Junction Temperature

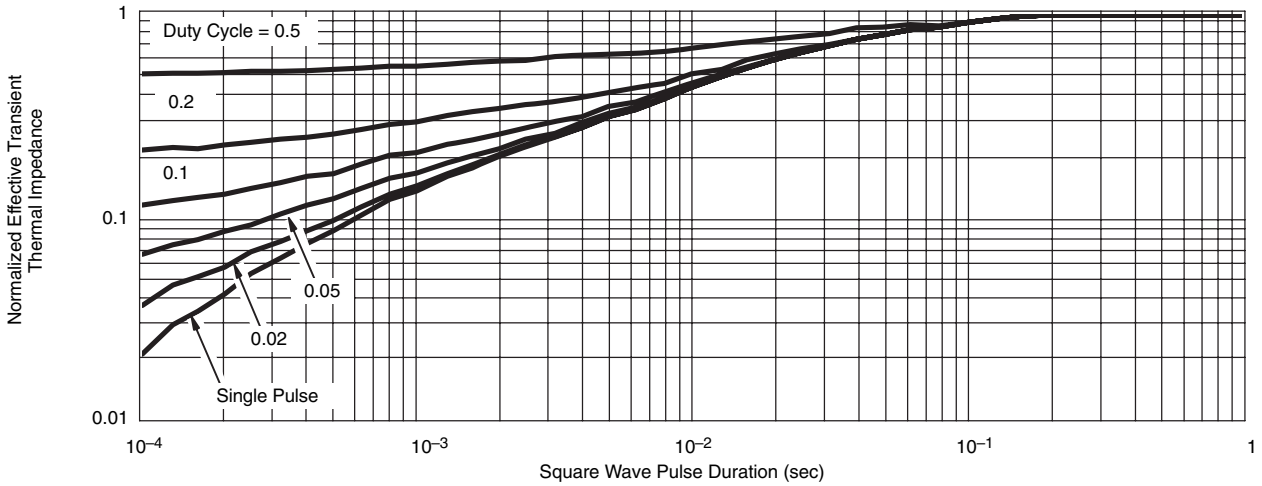
TYPICAL CHARACTERISTICS T_A = 25 °C, unless otherwise noted



Maximum Avalanche and Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

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