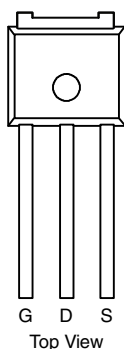


N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω) Max.	I_D (A)	Q_g (Typ.)
100	0.076 at $V_{GS} = 10$ V	g^d	8.5
	0.096 at $V_{GS} = 6$ V	g^d	

TO-251



Drain connected to DRAIN-TAB

Ordering Information

SUU09N10-76P-GE3 (Lead (Pb)-free and Halogen-free)

FEATURES

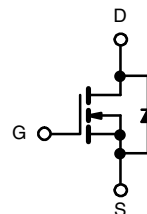
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFET
- 100 % R_g and UIS Tested
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- DC/DC Converters
- Motor Control



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25$ °C, unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C)	I_D	g^d	A
		g^d	
Pulsed Drain Current ($t = 300$ μ s)	I_{DM}	20	
Avalanche Current	I_{AS}	18	
Single Avalanche Energy ^a	E_{AS}	16.2	mJ
Maximum Power Dissipation ^a	P_D	32.1 ^b	W
		2.5	
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}	50	°C/W
Junction-to-Case (Drain)	R_{thJC}	3.9	

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 _{DS}	V _{GS} = 0 V, I _D = 250 μA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.5		4	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 250	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			1	μA
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 100 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	15			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 6.1 A		0.063	0.076	Ω
		V _{GS} = 6 V, I _D = 5.4 A		0.080	0.096	
Forward Transconductance ^a	g _{fs}	V _{DS} = - 20 V, I _D = 6.1 A		13		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 50 V, f = 1 MHz		505		pF
Output Capacitance	C _{oss}			71		
Reverse Transfer Capacitance	C _{rss}			35		
Total Gate Charge ^c	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 6.1 A		12.7	19.1	nC
		V _{DS} = 50 V, V _{GS} = 4.5 V, I _D = 6.1 A		8.5	12.8	
Q _{gs}			3.6			
Q _{gd}			4			
Gate Resistance	R _g	f = 1 MHz	0.2	0.9	1.8	Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 50 V, R _L = 10.2 Ω I _D ≅ 4.9 A, V _{GEN} = 10 V, R _g = 1 Ω		7	14	ns
Rise Time ^c	t _r			11	20	
Turn-Off Delay Time ^c	t _{d(off)}			11	20	
Fall Time ^c	t _f			6	12	
Drain-Source Body Diode Ratings and Characteristics T _C = 25 °C ^b						
Continuous Current	I _S				9	A
Pulsed Current	I _{SM}				20	
Forward Voltage ^a	V _{SD}	I _F = 4.9 A, V _{GS} = 0 V		0.82	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 4.9 A, dI/dt = 100 A/μs		36	53	ns
Peak Reverse Recovery Current	I _{RM(REC)}			2.7	4.1	A
Reverse Recovery Charge	Q _{rr}			46	69	nC

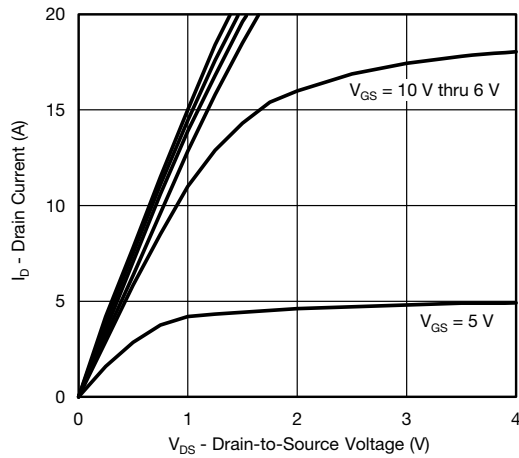
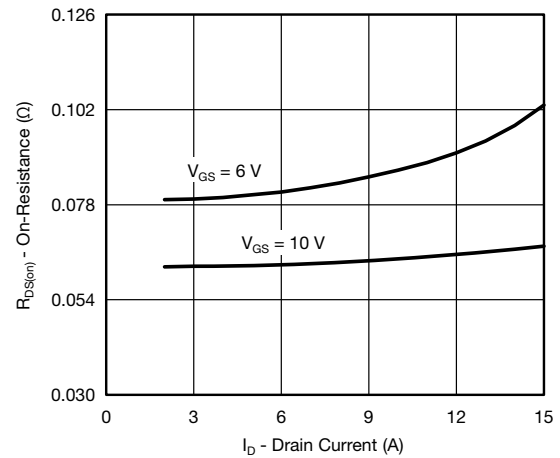
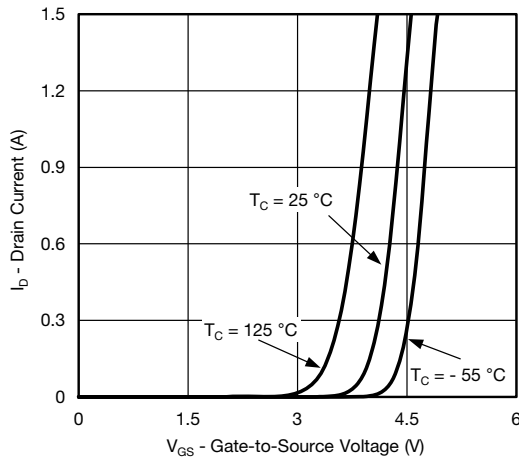
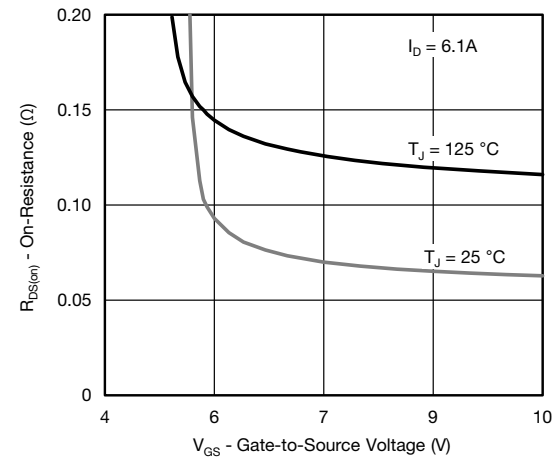
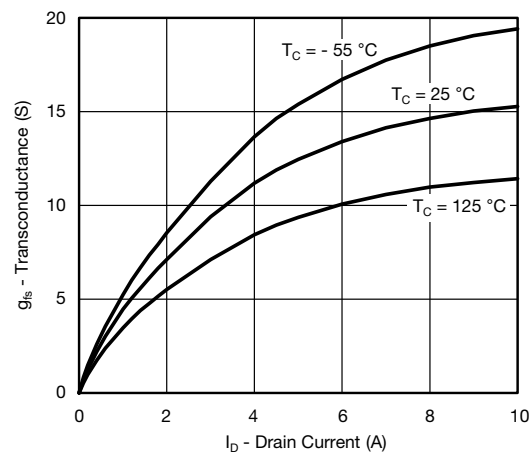
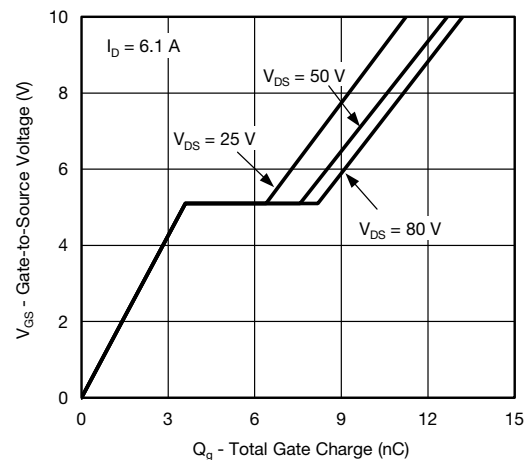
Notes:

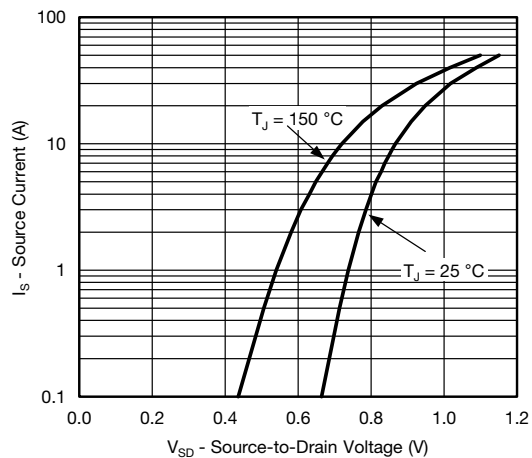
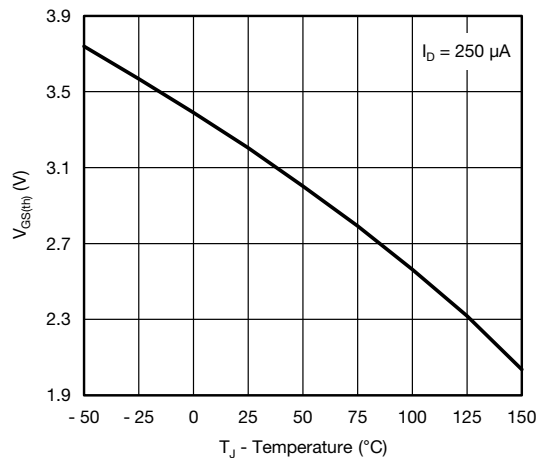
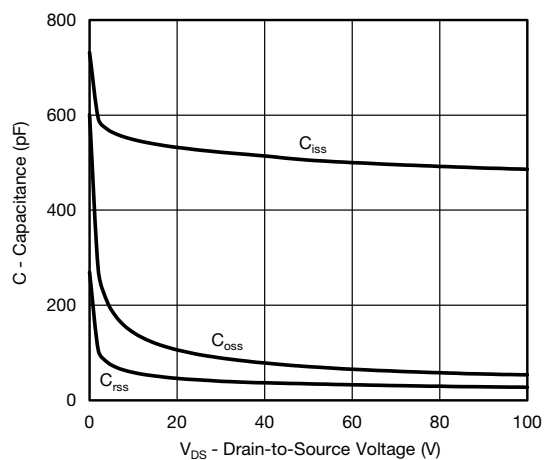
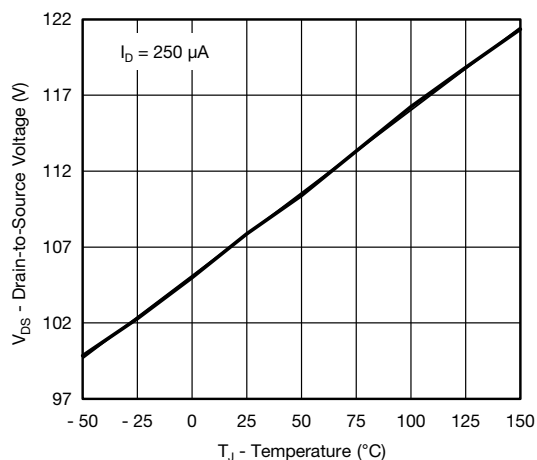
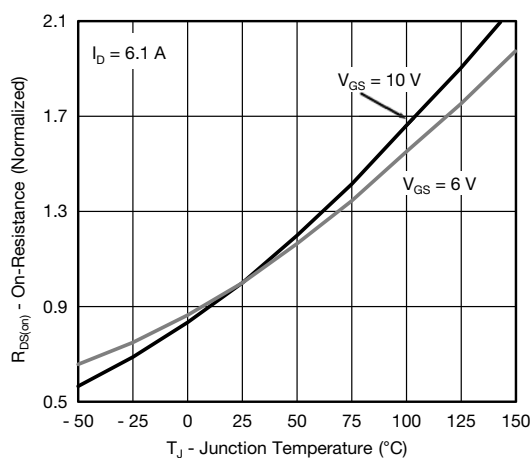
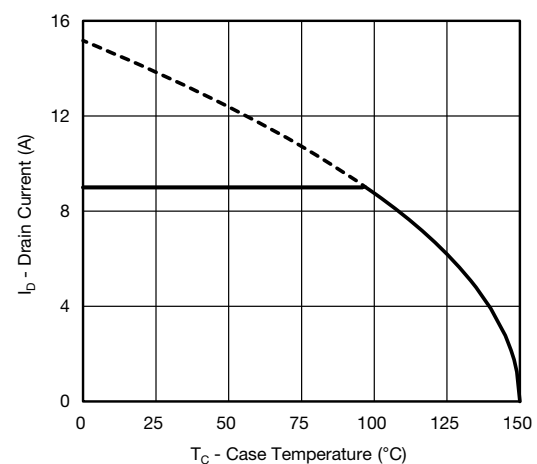
a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

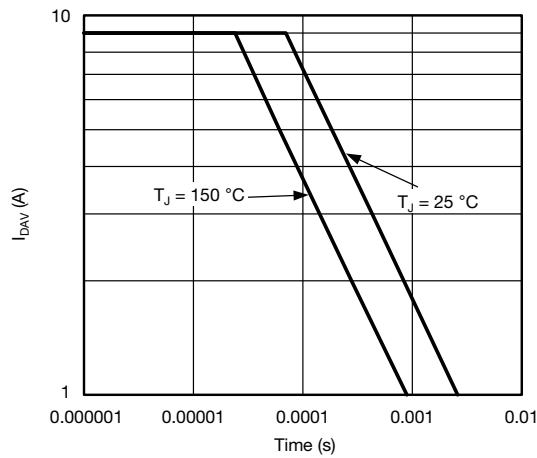
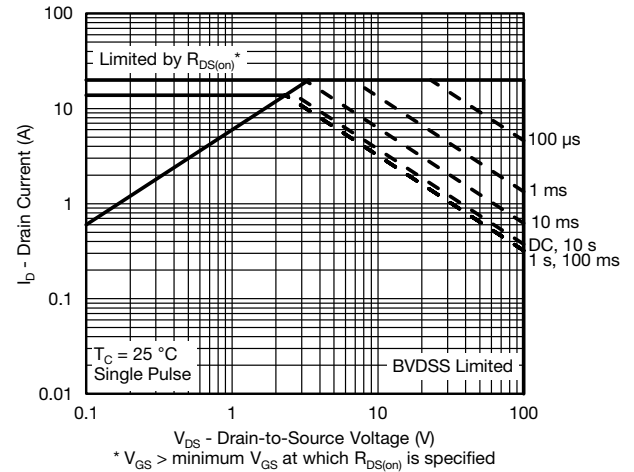
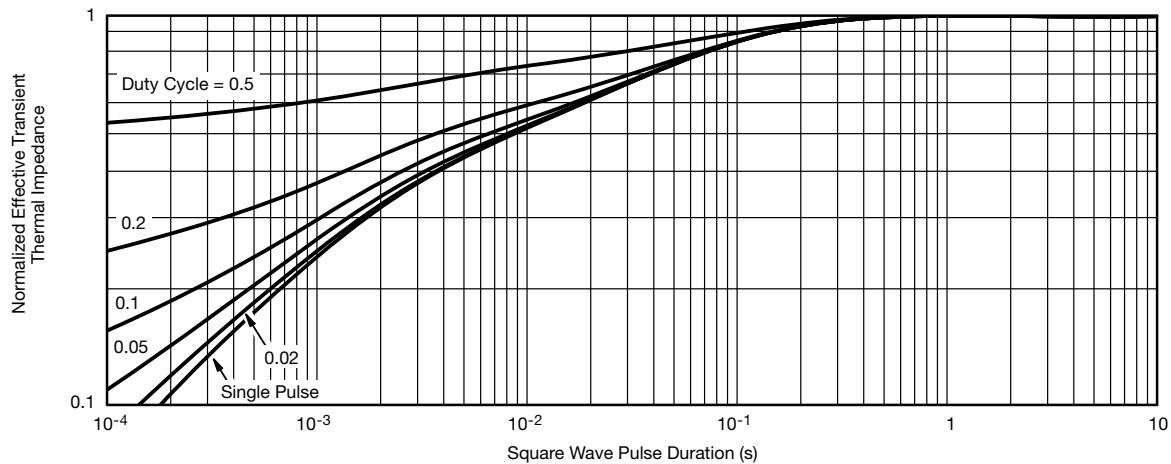
b. Guaranteed by design, not subject to production testing.

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)

Output Characteristics

On-Resistance vs. Drain Current

Transfer Characteristics

On-Resistance vs. Gate-to-Source Voltage

Transconductance

Gate Charge

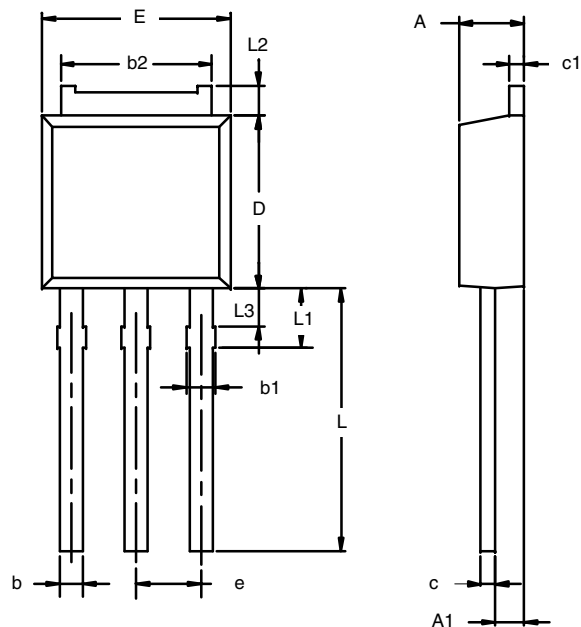
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)**Source-Drain Diode Forward Voltage****Threshold Voltage****Capacitance****Drain Source Breakdown vs. Junction Temperature****On-Resistance vs. Junction Temperature****Current Derating**

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Single Pulse Avalanche Current Capability vs. Time

Safe Operating Area

Normalized Thermal Transient Impedance, Junction-to-Case

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TO-251AA (IPAK)



DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.21	2.38	0.087	0.094
A1	0.89	1.14	0.035	0.045
b	0.71	0.89	0.028	0.035
b1	0.76	1.14	0.030	0.045
b2	5.23	5.43	0.206	0.214
C	0.46	0.58	0.018	0.023
C1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
E	6.48	6.73	0.255	0.265
e	2.28 BSC		0.090 BSC	
L	8.89	9.53	0.350	0.375
L1	1.91	2.28	0.075	0.090
L2	0.89	1.27	0.035	0.050
L3	1.15	1.52	0.045	0.060
ECN: T13-0362-Rev. F, 03-Jun-13 DWG: 5346				

Note

- Dimension L3 is for reference only.



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