



P-Channel 80-V (D-S) MOSFET

PRODUCT SUMMARY

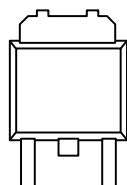
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^b	Q_g (Typ)
- 80	0.0112 at $V_{GS} = - 10$ V	- 110	85 nC
	0.0145 at $V_{GS} = - 4.5$ V	- 109	

FEATURES

- TrenchFET[®] Power MOSFET

RoHS
COMPLIANT

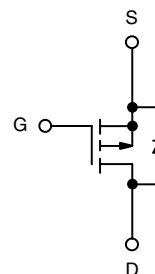
TO-263



G D S

Top View

Drain Connected to Tab



P-Channel MOSFET

Ordering Information: SUM110P08-11L-E3 (Lead (Pb)-free)

ABSOLUTE MAXIMUM RATINGS $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	- 80	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175\text{ }^{\circ}\text{C}$)	$T_C = 25\text{ }^{\circ}\text{C}$	- 110 ^a	A
	$T_C = 125\text{ }^{\circ}\text{C}$	- 71	
	$T_A = 25\text{ }^{\circ}\text{C}$	- 23.5 ^{b, c}	
	$T_A = 125\text{ }^{\circ}\text{C}$	13.6 ^{b, c}	
Pulsed Drain Current	I_{DM}	- 120	
Continuous Source-Drain Diode Current	$T_C = 25\text{ }^{\circ}\text{C}$	- 110	
	$T_A = 25\text{ }^{\circ}\text{C}$	- 9 ^{b, c}	
Avalanche Current	I_{AS}	- 75	
Single-Pulse Avalanche Energy	E_{AS}	281	mJ
Maximum Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	375	W
	$T_C = 125\text{ }^{\circ}\text{C}$	125	
	$T_A = 25\text{ }^{\circ}\text{C}$	13.6 ^{b, c}	
	$T_A = 125\text{ }^{\circ}\text{C}$	4.5 ^{b, c}	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 175	$^{\circ}\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, d}	R_{thJA}	8	11	$^{\circ}\text{C/W}$
Maximum Junction-to-Case (Drain)	R_{thJC}	0.33	0.4	

Notes:

a. Package limited.

b. Surface Mounted on 1" x 1" FR4 board.

c. $t = 10$ s.d. Maximum under Steady State conditions is $^{\circ}\text{C/W}$.



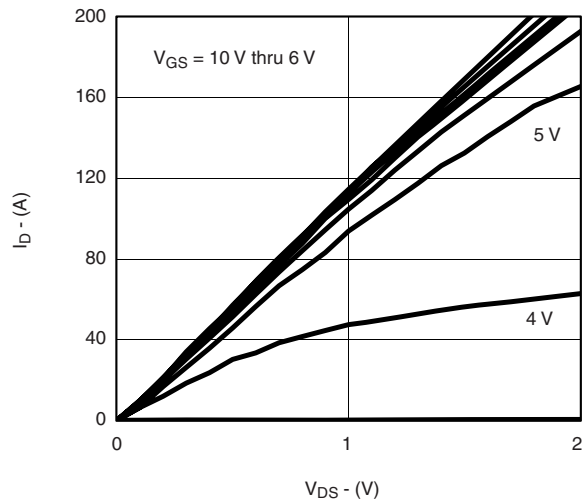
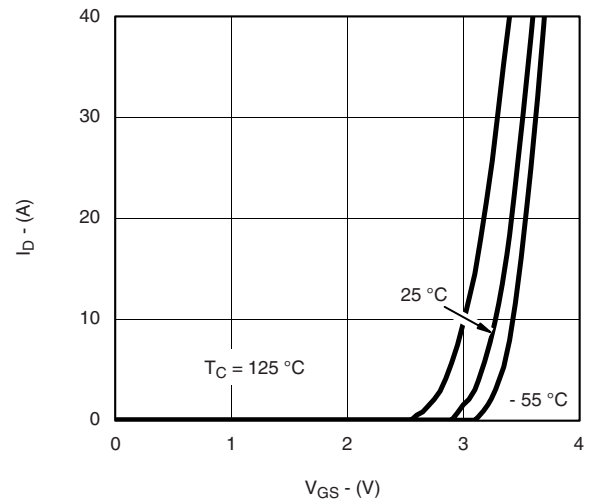
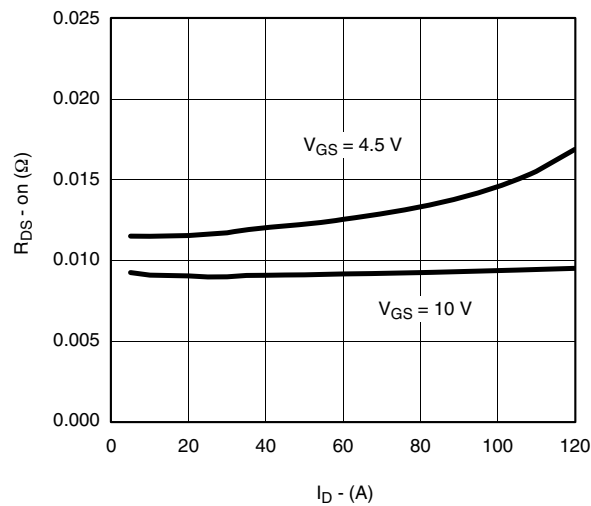
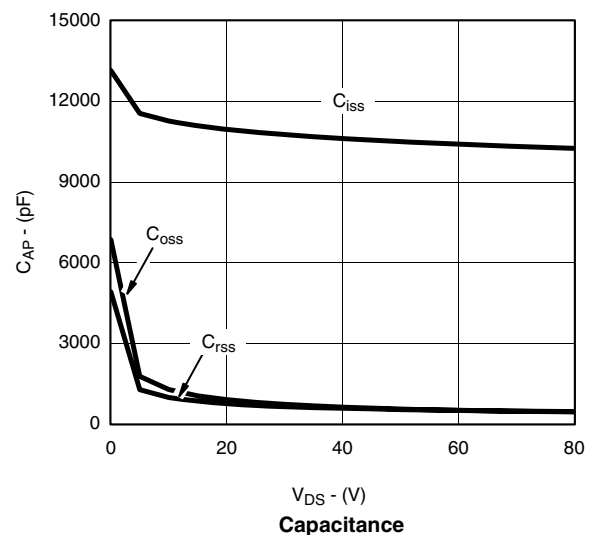
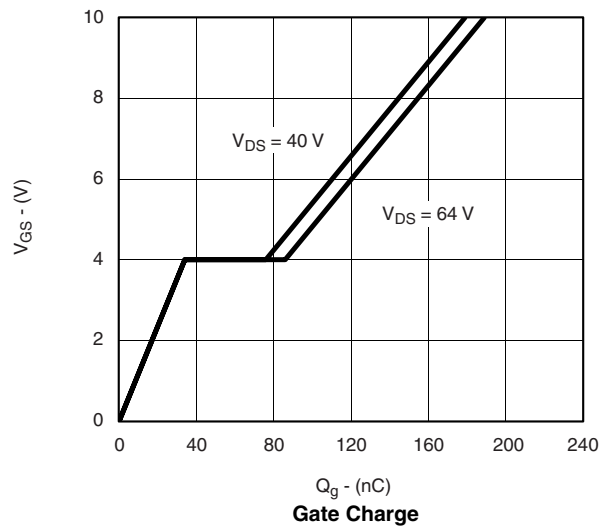
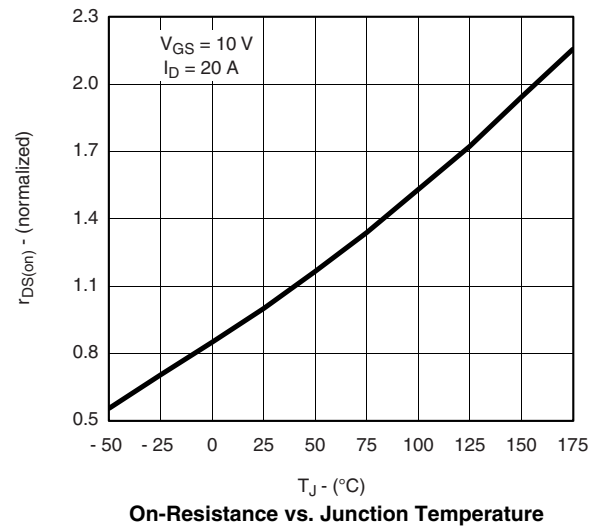
SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}$, $I_D = -250\text{ }\mu\text{A}$	- 80			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -1\text{ }\mu\text{A}$		- 85		mV/ $^{\circ}\text{C}$
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			- 5.5		
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\text{ }\mu\text{A}$	- 1		- 3	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -80\text{ V}$, $V_{GS} = 0\text{ V}$			- 1	μA
		$V_{DS} = -80\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 175\text{ }^{\circ}\text{C}$			- 500	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 10\text{ V}$, $V_{GS} = -10\text{ V}$	- 120			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10\text{ V}$, $I_D = -20\text{ A}$		0.0093	0.0112	Ω
		$V_{GS} = -4.5\text{ V}$, $I_D = -15\text{ A}$		0.012	0.0145	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}$, $I_D = -20\text{ A}$		85		S
Dynamic ^b						
Input Capacitance	C_{iss}	$V_{DS} = -40\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$		10850		pF
Output Capacitance	C_{oss}			800		
Reverse Transfer Capacitance	C_{rss}			700		
Total Gate Charge	Q_g	$V_{DS} = -40\text{ V}$, $V_{GS} = -10\text{ V}$, $I_D = -110\text{ A}$		180	270	nC
		$V_{DS} = -40\text{ V}$, $V_{GS} = -4.5\text{ V}$, $I_D = -110\text{ A}$		85	130	
Gate-Source Charge	Q_{gs}			35		
Gate-Drain Charge	Q_{gd}			42		
Gate Resistance	R_g	$f = 1\text{ MHz}$		3.6		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -40\text{ V}$, $R_L = 0.36\text{ }\Omega$ $I_D \equiv -110\text{ A}$, $V_{GEN} = -10\text{ V}$, $R_g = 1\text{ }\Omega$		20	30	ns
Rise Time	t_r			330	500	
Turn-Off Delay Time	$t_{d(off)}$			135	205	
Fall Time	t_f			550	825	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^{\circ}\text{C}$			- 110	A
Pulse Diode Forward Current ^a	I_{SM}				- 120	
Body Diode Voltage	V_{SD}	$I_S = -20\text{ A}$		- 0.8	- 1.5	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -20\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, $T_J = 25\text{ }^{\circ}\text{C}$		65	100	ns
Body Diode Reverse Recovery Charge	Q_{rr}			135	205	nC
Reverse Recovery Fall Time	t_a			43		ns
Reverse Recovery Rise Time	t_b			22		

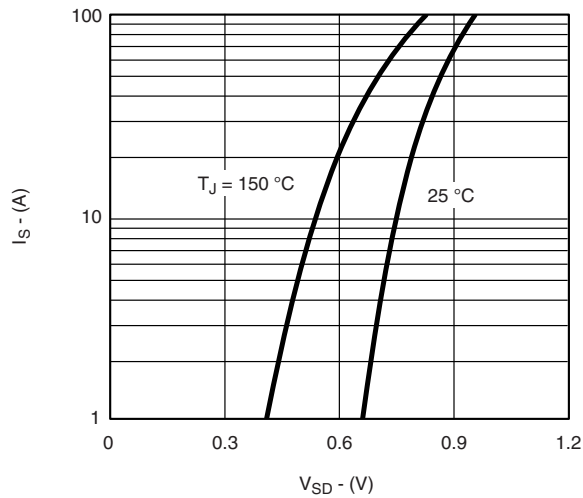
Notes:

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

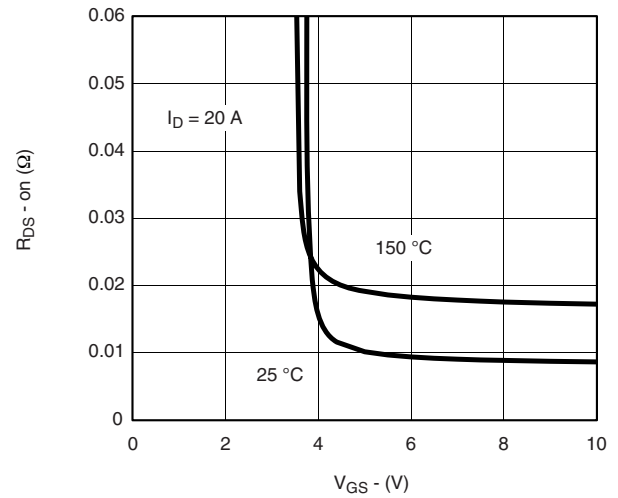
b. Guaranteed by design, not subject to production testing.

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.

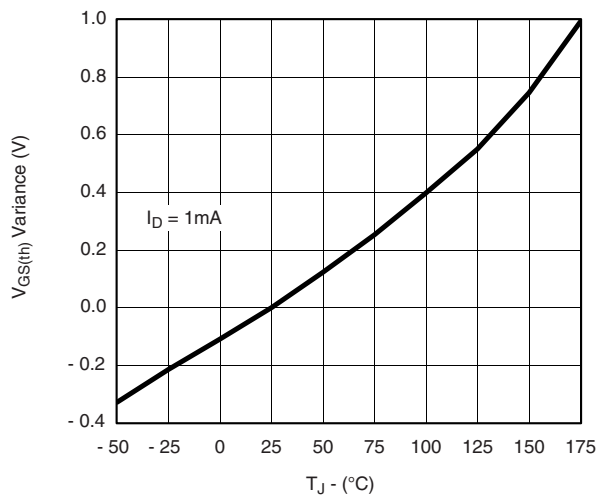
**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted**Output Characteristics****Transfer Characteristics****On-Resistance vs. Drain Current****Capacitance****Gate Charge****On-Resistance vs. Junction Temperature**

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

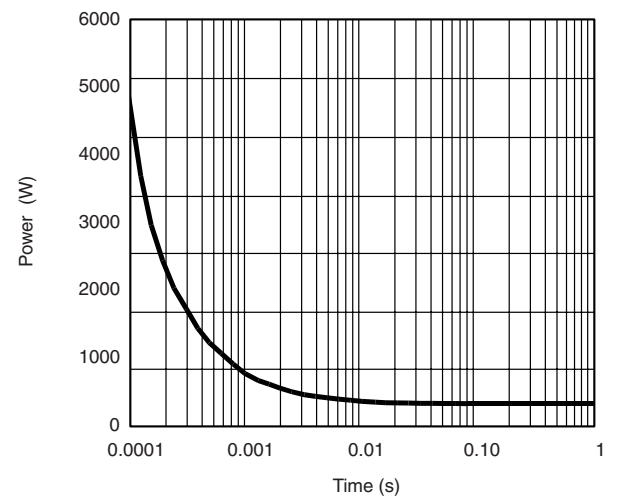
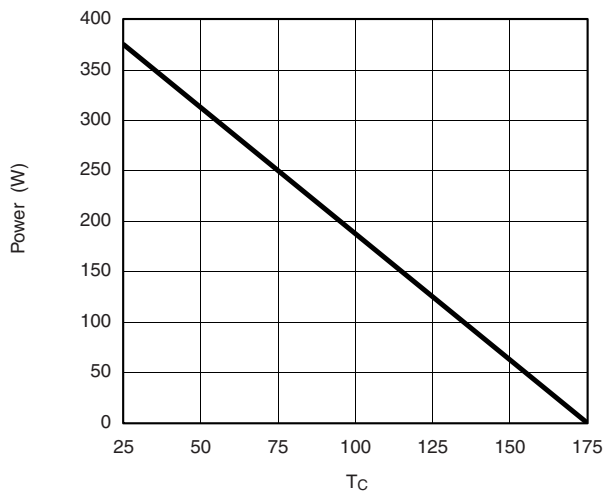
Source-Drain Diode Forward Voltage



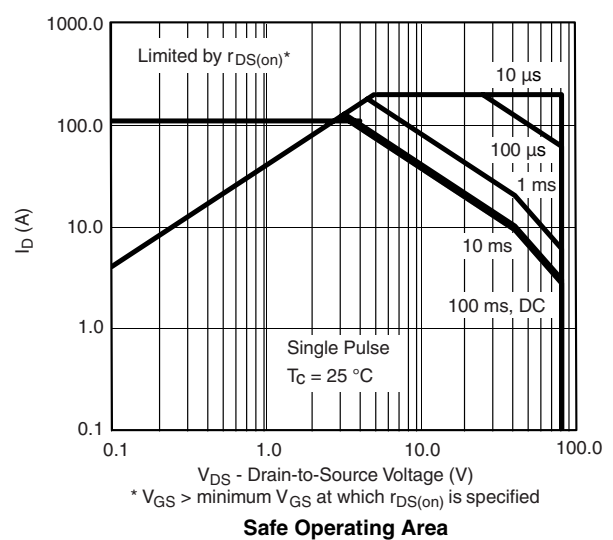
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

Single Pulse Power, Junction-to-Case ($T_C = 25^\circ\text{C}$)

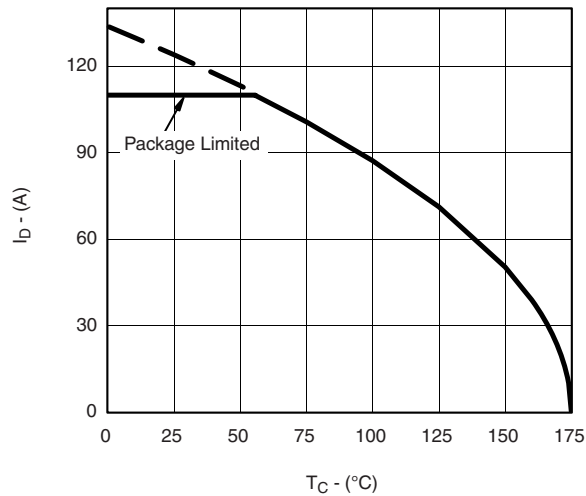
Power Derating, Junction-to-Case



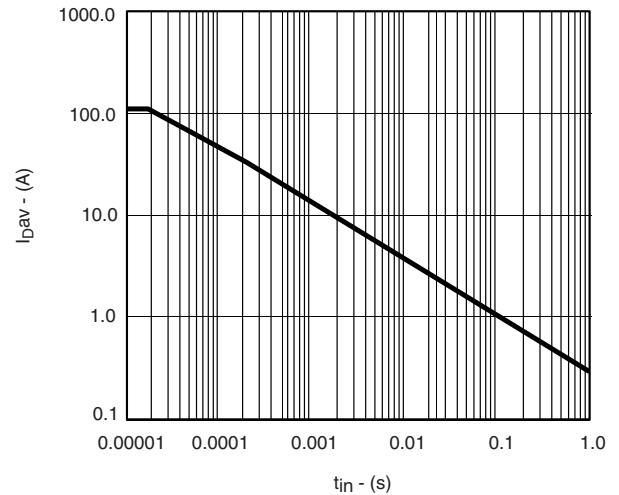
Safe Operating Area



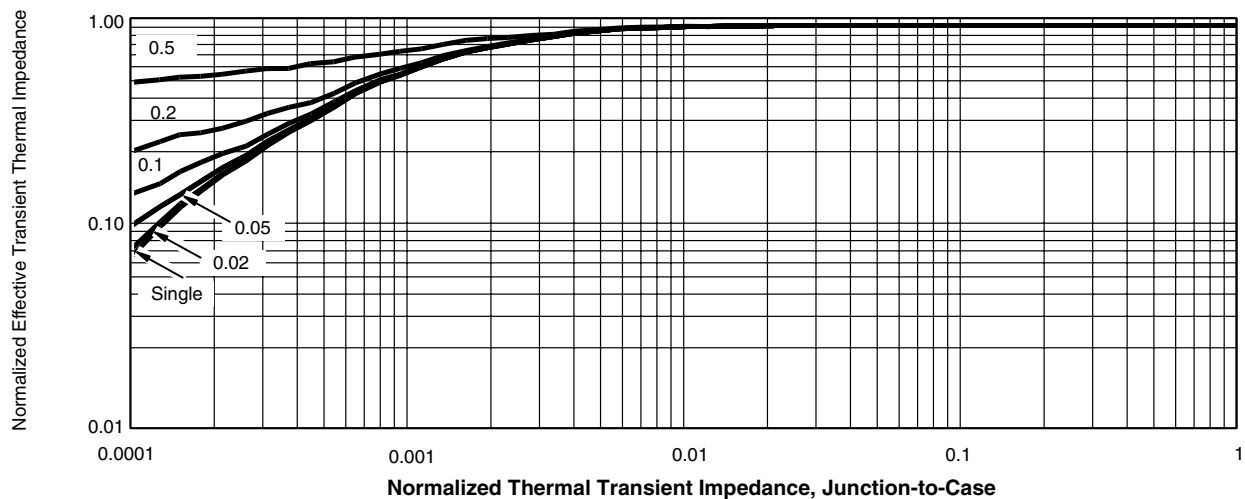
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



**Max Avalanche and Drain Current
vs. Case Temperature**



Avalanche Current vs. Time



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