



SUM110P06-07L
Vishay Siliconix

P-Channel 60-V (D-S) 175°C MOSFET

PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A) ^d
-60	0.0069 @ V _{GS} = -10 V	-110
	0.0088 @ V _{GS} = -4.5 V	-110

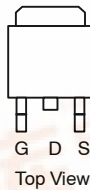
FEATURES

- TrenchFET® Power MOSFET
- New Package with Low Thermal Resistance

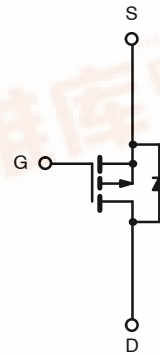
APPLICATIONS

- Automotive
 - 12-V Boardnet
 - High-Side Switches
 - Motor Drives

TO-263



Ordering Information: SUM110P06-07L
SUM110P06-07L—E3 (Lead Free)



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C = 25°C UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current ^d (T _J = 175°C)	I _D	T _C = 25°C	-110
		T _C = 125°C	-95
Pulsed Drain Current	I _{DM}	-240	A
Avalanche Current	I _{AS}	-75	
Single Pulse Avalanche Energy ^a	E _{AS}	281	mJ
Power Dissipation	P _D	T _C = 25°C	375 ^c
		T _A = 25°C ^b	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 ^b	R _{thJA}	40	°C/W
Junction-to-Case	R _{thJC}	0.4	

Notes:

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

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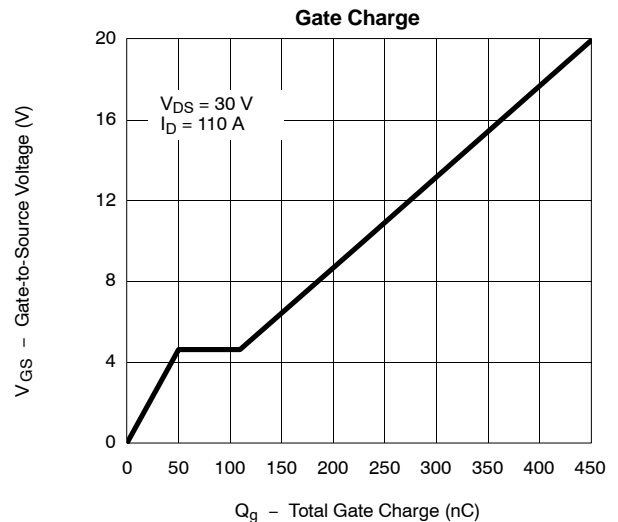
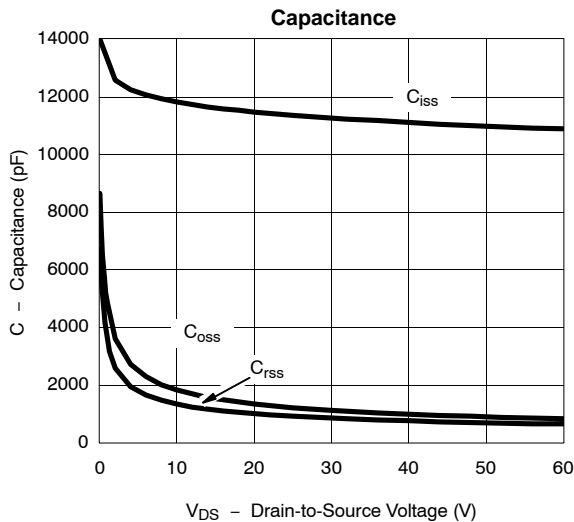
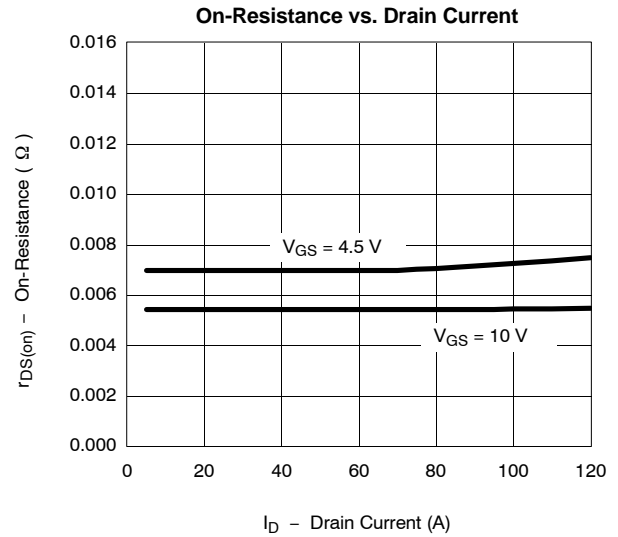
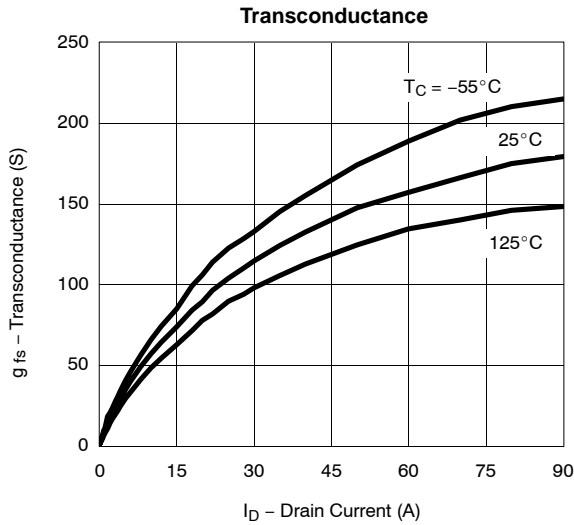
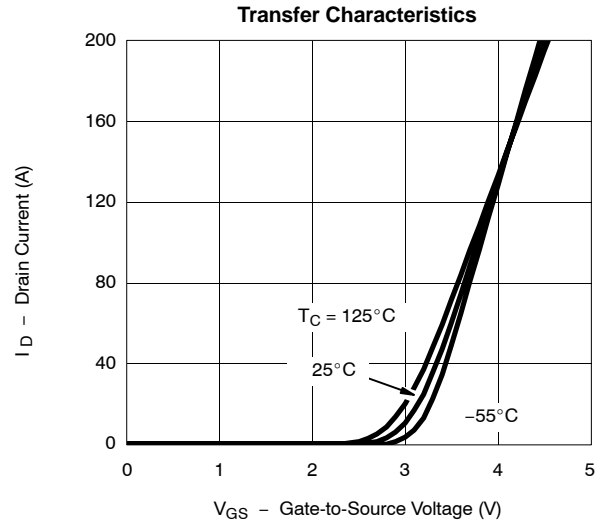
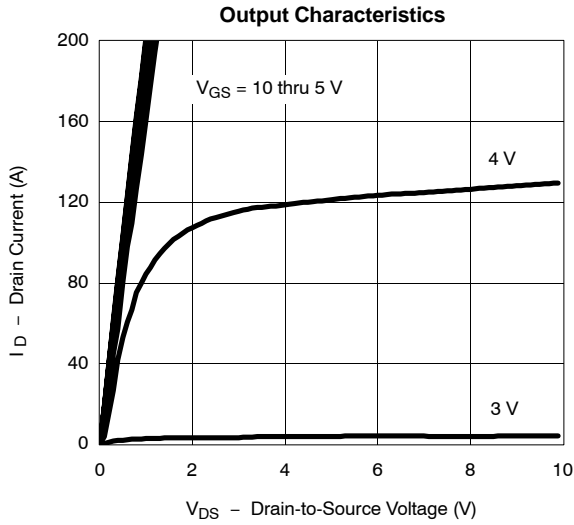
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Static							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -250 μA	-60			V	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1		-3		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -60 V, V _{GS} = 0 V			-1	μA	
		V _{DS} = -60 V, V _{GS} = 0 V, T _J = 125 °C			-50		
		V _{DS} = -60 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	0.0069	Ω	
		V _{GS} = -10 V, I _D = -30 A, T _J = 125 °C			0.0115		
		V _{GS} = -10 V, I _D = -30 A, T _J = 175 °C			0.0138		
		V _{GS} = -4.5 V, I _D = -20 A		0.007	0.0088		
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -50 A	20			S	
Dynamic^b							
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = -25 V, f = 1 MHz		11400		pF	
Output Capacitance	C _{oss}			1200			
Reverse Transfer Capacitance	C _{rss}			900			
Total Gate Charge ^c	Q _g	V _{DS} = -30 V, V _{GS} = -10 V, I _D = -110 A		230	345	nC	
Gate-Source Charge ^c	Q _{gs}			50			
Gate-Drain Charge ^c	Q _{gd}			60			
Gate Resistance	R _g	f = 1.0 MHz		3		Ω	
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = -30 V, R _L = 0.27 Ω I _D = -110 A, V _{GEN} = -10 V, R _g = 2.5 Ω		20	30	ns	
Rise Time ^c	t _r			160	240		
Turn-Off Delay Time ^c	t _{d(off)}			200	300		
Fall Time ^c	t _f			240	360		
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b							
Continuous Current	I _s				-110	A	
Pulsed Current	I _{SM}				-240		
Forward Voltage ^a	V _{SD}	I _F = -85 A, V _{GS} = 0 V		-1.0	-1.5	V	
Reverse Recovery Time	t _{rr}	I _F = -85 A, di/dt = 100 A/μs		65	100	ns	
Peak Reverse Recovery Current	I _{RM(REC)}				-4.2	-6.3	A
Reverse Recovery Charge	Q _{rr}				0.14	0.32	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.

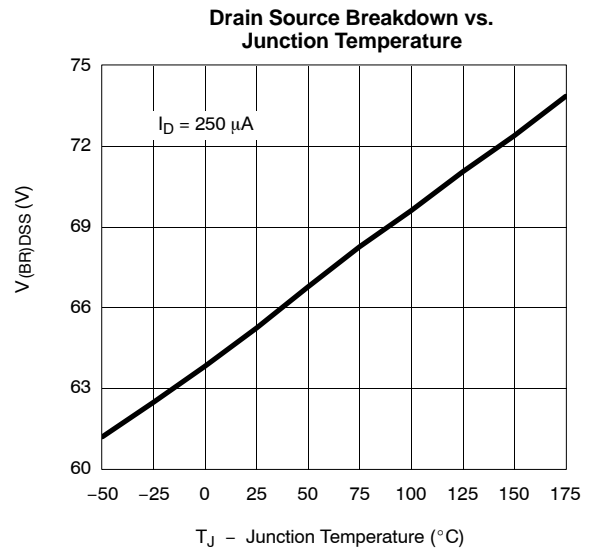
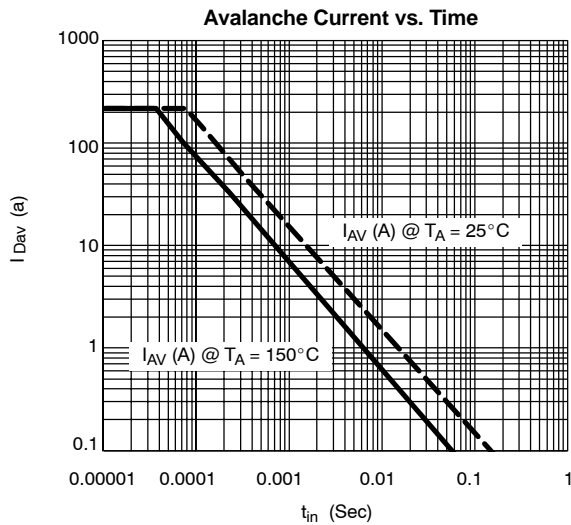
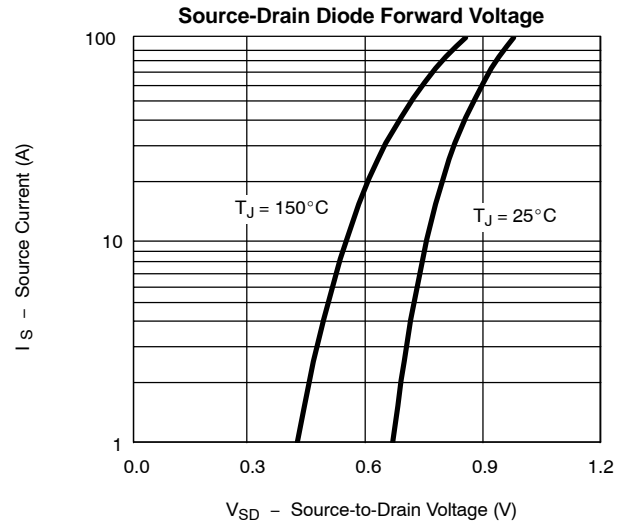
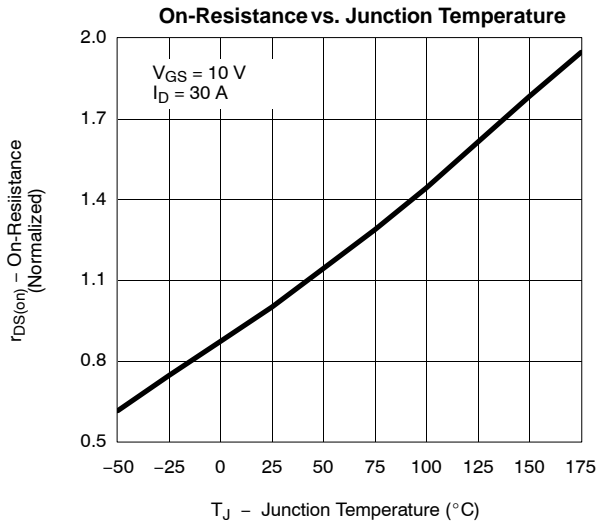


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





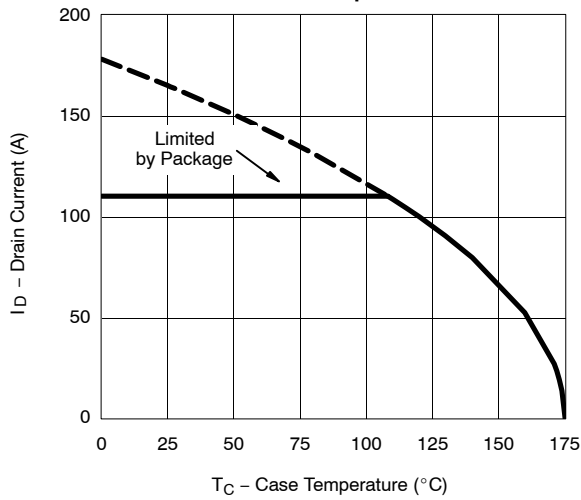
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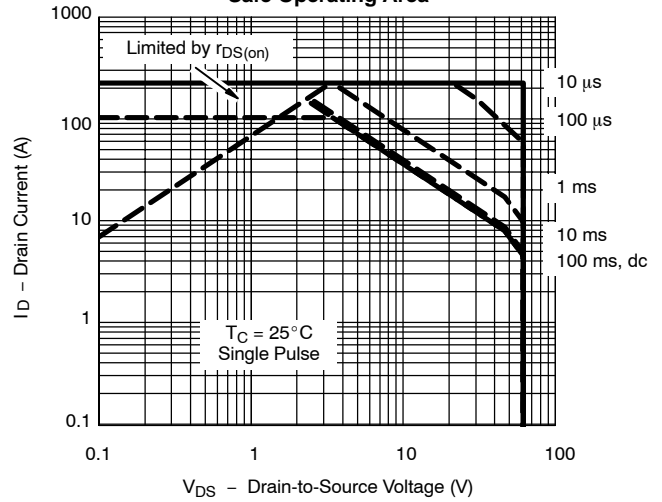


THERMAL RATINGS

Maximum Avalanche and Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

