



New Product

SUD08P06-155L

Vishay Siliconix

P-Channel 60-V (D-S), 175°C MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
-60	0.155 @ $V_{GS} = -10$ V	-8.4	12.5
	0.280 @ $V_{GS} = -4.5$ V	-7.4	

FEATURES

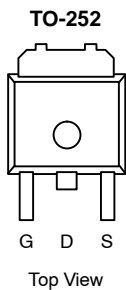
- TrenchFET® Power MOSFET
- 175°C Rated Maximum Junction Temperature



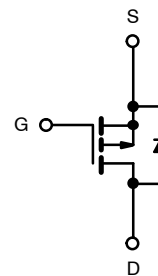
Termination is Pb-free

APPLICATIONS

- Automotive Such As:
 - High-Side Switch
 - Motor Drives
 - 12-V Battery



Drain Connected to Tab



P-Channel MOSFET

Ordering Information: SUD08P06-155L—E3 (Lead (Pb)-Free)

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	-8.4	A
	$T_C = 100^\circ\text{C}$		-6	
Pulsed Drain Current		I_{DM}	-18	
Continuing Source Current (Diode Conduction)		I_S	-8.4	
Avalanche Current		I_{AS}	-12	
Single-Pulse Avalanche Energy	$L = 0.1$ mH	E_{AS}	7.2	mJ
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	25 ^a	W
	$T_A = 25^\circ\text{C}$		2 ^b	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^b	$t \leq 10$ sec	R_{thJA}	20	25	$^\circ\text{C/W}$
	Steady State		62	75	
Junction-to-Case		R_{thJC}	5	6	

Notes

- See SOA Curve for Voltage Derating.
- Surface Mounted on 1" x 1" FR4 Board.


SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{DS} = 0 V, I _D = -250 μA	-60			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1.0	-2.0	-3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -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			-150	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -10 V	-10			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = -10 V, I _D = -5 A		0.125	0.155	Ω
		V _{GS} = -10 V, I _D = -5 A, T _J = 125°C			0.280	
		V _{GS} = -10 V, I _D = -5 A, T _J = 175°C			0.350	
		V _{GS} = -4.5 V, I _D = -2 A		0.158	0.280	
Forward Transconductance ^b	g _{fs}	V _{DS} = -15 V, I _D = -5 A		8		S
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = -25 V, V _{GS} = 0 V, f = 1 MHz		450		pF
Output Capacitance	C _{oss}			65		
Reverse Transfer Capacitance	C _{rss}			40		
Total Gate Charge	Q _g	V _{DS} = -30 V, V _{GS} = -10 V, I _D = -8.4 A		12.5	19	nC
Gate-Source Charge	Q _{gs}			2.3		
Gate-Drain Charge	Q _{gd}			3.2		
Gate Resistance	R _g	f = 1 MHz		8.0		Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = -30 V, R _L = 3.57 Ω I _D = 8.4 A, V _{GEN} = -10 V, R _g = 2.5 Ω		5	10	ns
Rise Time ^c	t _r			14	25	
Turn-Off Delay Time ^c	t _{d(off)}			15	25	
Fall Time ^c	t _f			7	12	
Source-Drain Diode Ratings and Characteristics (T_C = 25°C)^a						
Pulsed Current	I _{SM}				-20	A
Forward Voltage ^b	V _{SD}	I _F = -2 A, V _{GS} = 0 V		-0.9	-1.3	V
Reverse Recovery Time	t _{rr}	I _F = -8 A, di/dt = 100 A/μs		50	80	ns
Reverse Recovery Charge	Q _{rr}				80	120

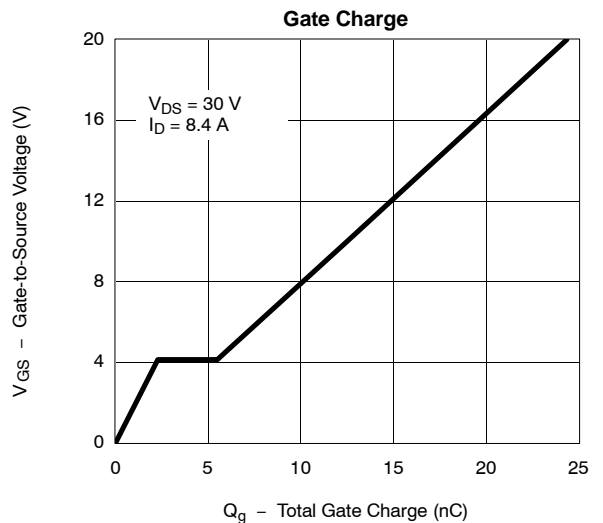
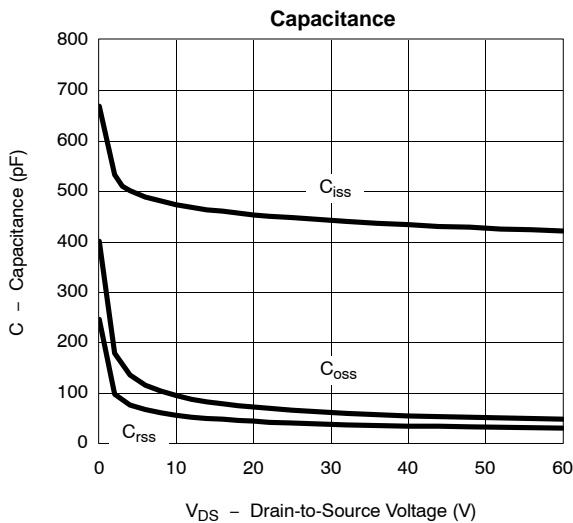
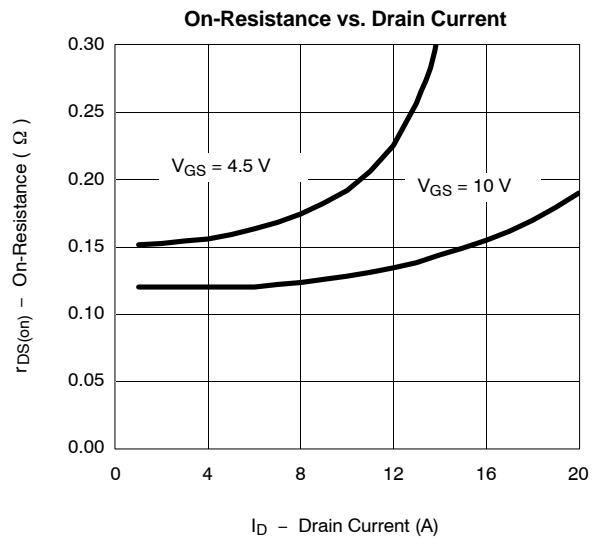
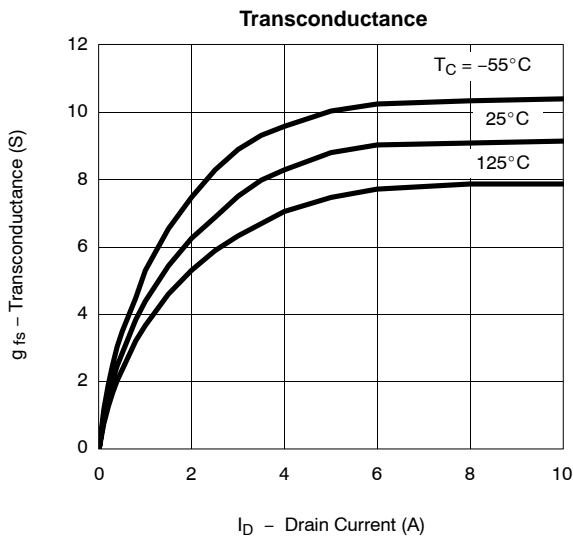
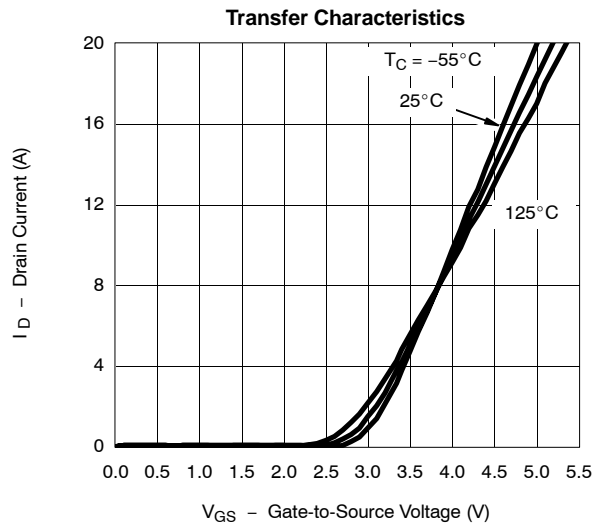
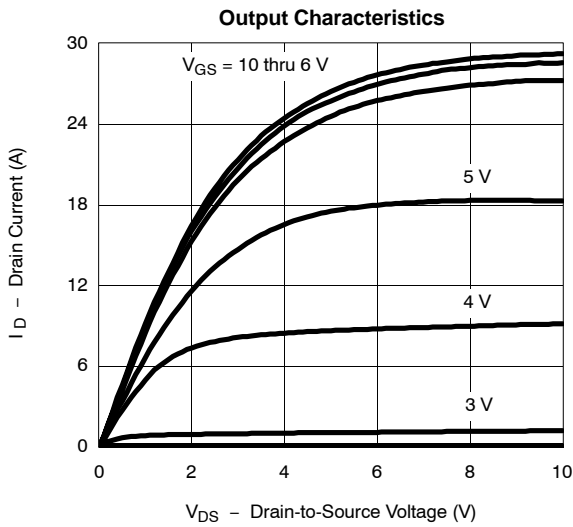
Notes:

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

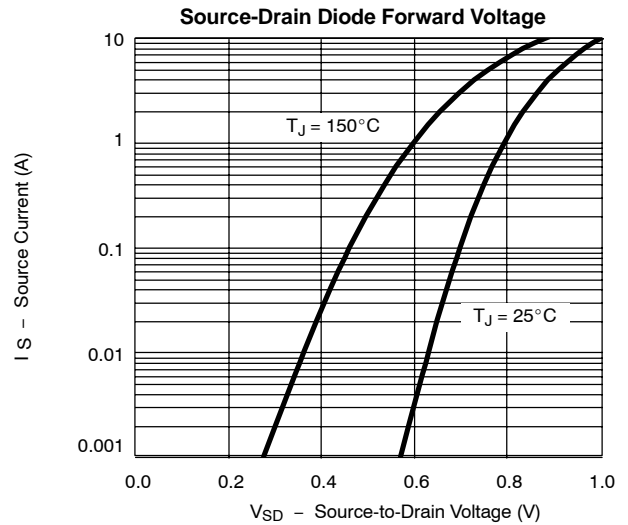
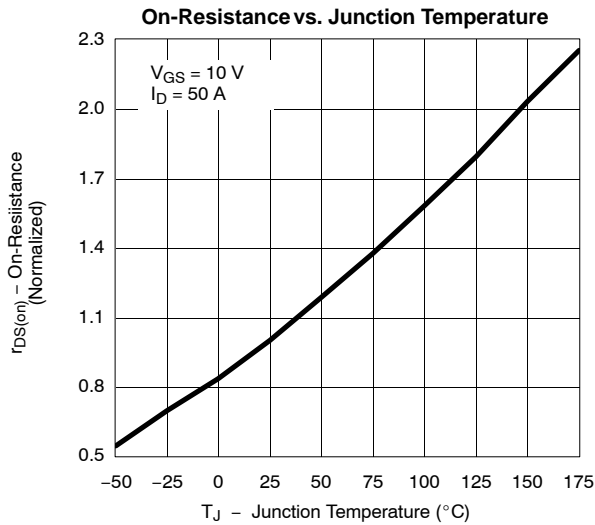
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



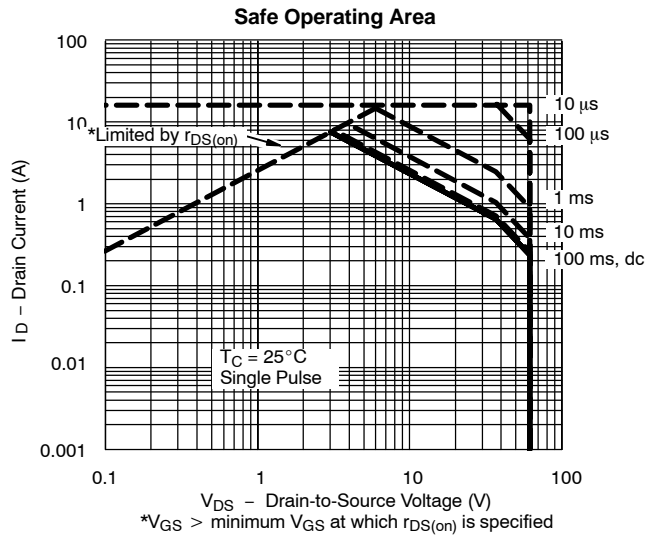
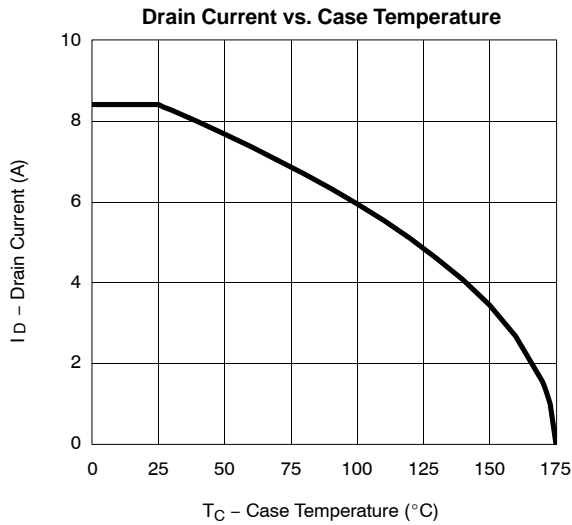
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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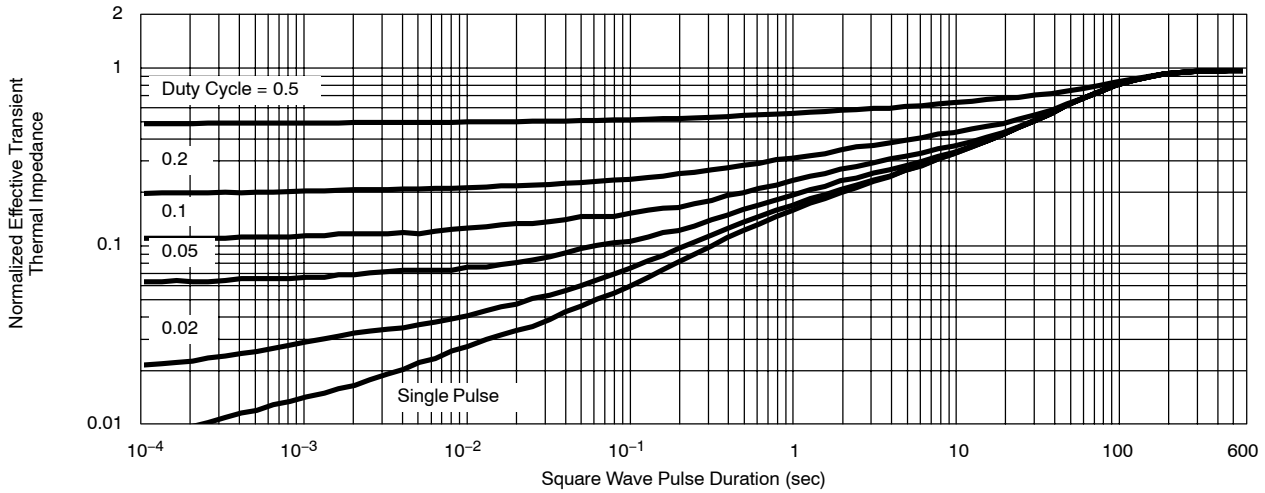
THERMAL RATINGS



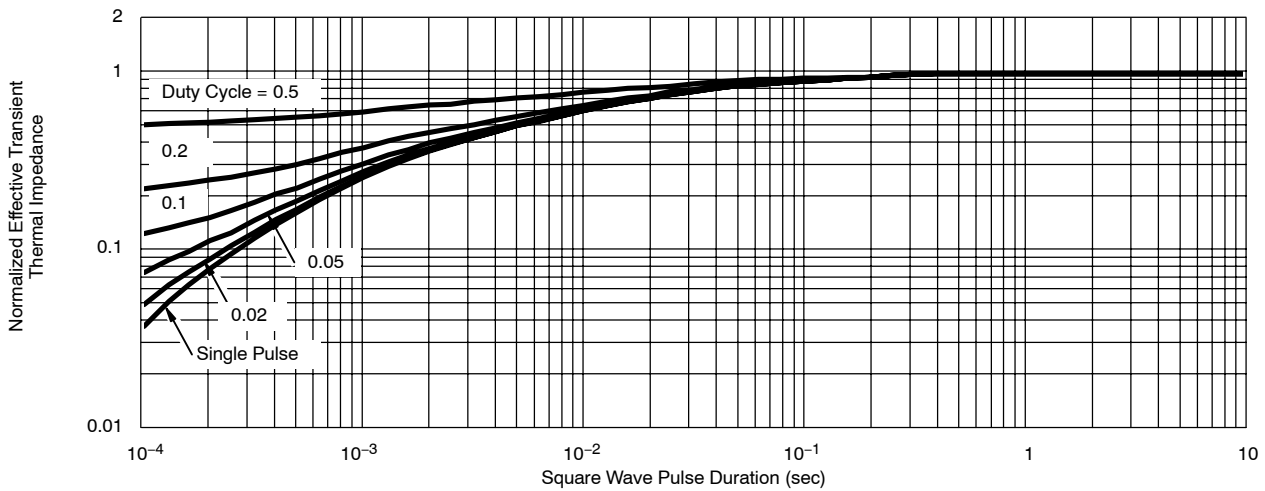


THERMAL RATINGS

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see <http://www.vishay.com/ppg?73209>.