

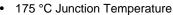


N-Channel 150 V (D-S) 175 °C MOSFET

PRODUCT SUMMARY				
V _{DS} (V)	$V_{DS}(V)$ $R_{DS(on)}(\Omega)$			
150	$0.095 \text{ at V}_{GS} = 10 \text{ V}$	15		
	0.100 at V _{GS} = 6 V	15		

FEATURES

TrenchFET® Power MOSFETS



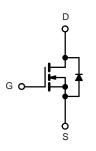


100 % R_g Tested

Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

· Primary Side Switch



N-Channel MOSFET

TO-252	Drain Connected to Tab
Top View	

Ordering Information: SUD15N15-95-E3 (Lead (Pb) free)

ABSOLUTE MAXIMUM RATINGS ($T_C =$	25 °C, unless othe	rwise noted)		_	
Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		V _{DS}	150	V	
Gate-Source Voltage		V _{GS}	± 20	- V	
Continuous Desir Compant /T 475 90\D	T _C = 25 °C	1	15		
Continuous Drain Current (T _J = 175 °C) ^b	T _C = 125 °C	I _D	8.7		
Pulsed Drain Current		I _{DM}	25	A	
Continuous Source Current (Diode Conduction)		I _S	15		
Avalanche Current	I _{AR}	15			
Repetitive Avalanche Energy (Duty Cycle ≤ 1 %)	L = 0.1 mH	E _{AR}	11.3	mJ	
Mariana Para Disaination	T _C = 25 °C	В	62 ^b	10/	
Maximum Power Dissipation	T _A = 25 °C	P _D	2.7 ^a	W	
Operating Junction and Storage Temperature Range		T _J , T _{stq}	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
hungtion to Ambienti	t ≤ 10 s	- R _{thJA}	16	20	°C/W
Junction-to-Ambient ^a	Steady State		45	55	
Junction-to-Case		R _{thJC}	2	2.4	

Notes:

- a. Surface mounted on 1" x 1" FR4 board.
- b. See SOA curve for voltage derating.

SUD15N15-95

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SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)							
Parameter	Symbol	Test Conditions	Min.	Typ. ^a	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	150			V	
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \mu\text{A}$	2			٧	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
		V _{DS} = 120 V, V _{GS} = 0 V			1	μА	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 120 V, V _{GS} = 0 V, T _J = 125 °C			50		
		V _{DS} = 120 V, V _{GS} = 0 V, T _J = 175 °C			250		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	25			Α	
		V _{GS} = 10 V, I _D = 15 A		0.077	0.095	Ω	
D : 0	D	V _{GS} = 10 V, I _D = 15 A, T _J = 125 °C			0.190		
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 15 A, T _J = 175 °C			0.250		
		V _{GS} = 6 V, I _D = 10 A		0.081	0.100		
Forward Transconductance ^b	9 _{fs}	V _{DS} = 15 V, I _D = 15 A		25		S	
Dynamic ^a							
Input Capacitance	C _{iss}			900			
Output Capacitance	C _{oss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		115		pF	
Reverse Transfer Capacitance	C _{rss}			70			
Total Gate Charge ^c	Qg			20	25		
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 75 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 15 \text{ A}$		5.5		nC	
Gate-Drain Charge ^c	Q _{gd}			7			
Gate Resistance	R _g		1		3.2	Ω	
Turn-On Delay Time ^c	t _{d(on)}			8	12		
Rise Time ^c	t _r	$V_{DD} = 75 \text{ V}, R_L = 5 \Omega$		35	55	20	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 15 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 2.5 \Omega$		17	25	ns	
Fall Time ^c	t _f			30	45		
Source-Drain Diode Ratings and Characteristic (T _C = 25 °C)							
Pulsed Current	I _{SM}				25	Α	
Diode Forward Voltage ^b	V_{SD}	$I_F = 15 \text{ A}, V_{GS} = 0 \text{ V}$		0.9	1.5	V	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 15 A, dI/dt = 100 A/μs		55	85	ns	

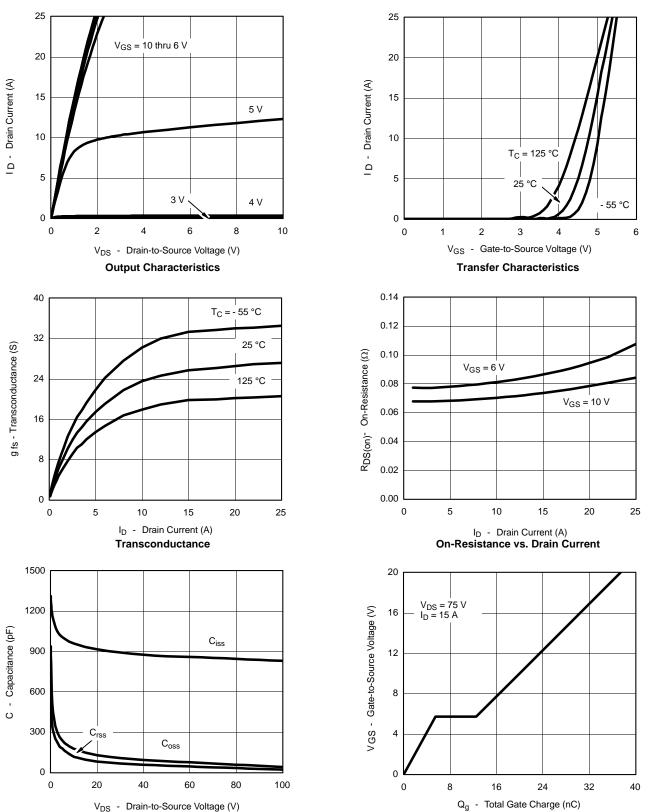
Notes:

- a. Guaranteed by design, not subject to production testing.
- b. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$
- 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 noted)

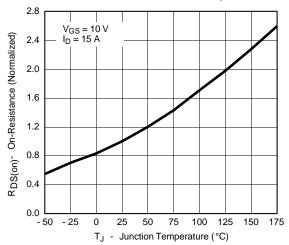


Capacitance

Gate Charge

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TYPICAL CHARACTERISTICS (25 °C unless noted)



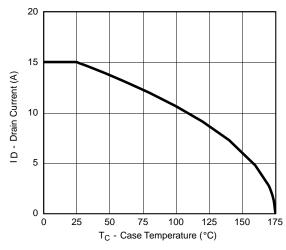
On-Resistance vs. Junction Temperature

Source Current (A) T_J = 150 °C 10 T_J = 25 °C တ 0 0.3 0.6 1.2 V_{SD} - Source-to-Drain Voltage (V)

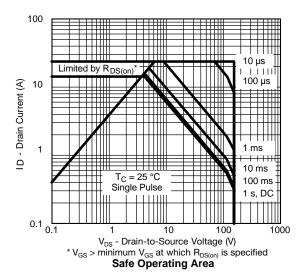
100

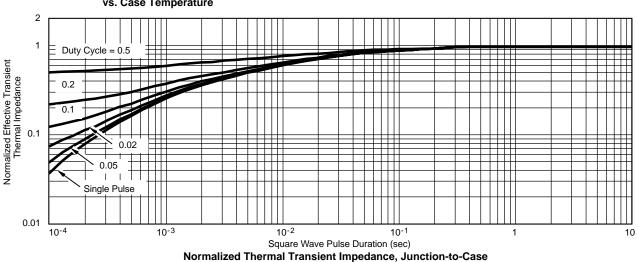
Source-Drain Diode Forward Voltage

THERMAL RATINGS



Maximum Avalanche Drain Current vs. Case Temperature



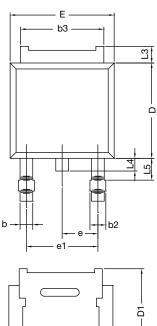


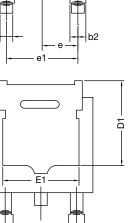
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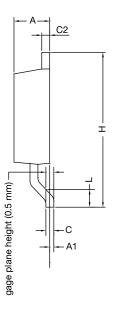


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TO-252AA Case Outline







	MILLIMETERS		INC	HES	
DIM.	MIN.	MAX.	MIN.	MAX.	
Α	2.18	2.38	0.086	0.094	
A1	-	0.127	-	0.005	
b	0.64	0.88	0.025	0.035	
b2	0.76	1.14	0.030	0.045	
b3	4.95	5.46	0.195	0.215	
С	0.46	0.61	0.018	0.024	
C2	0.46	0.89	0.018	0.035	
D	5.97	6.22	0.235	0.245	
D1	4.10	-	0.161	-	
Е	6.35	6.73	0.250	0.265	
E1	4.32	-	0.170	-	
Н	9.40	10.41	0.370	0.410	
е	2.28 BSC		0.090	BSC	
e1	4.56 BSC		0.180 BSC		
L	1.40	1.78	0.055	0.070	
L3	0.89	1.27	0.035	0.050	
L4	-	1.02	-	0.040	
L5	1.01	1.52	0.040	0.060	
ECN: T16-0236-Rev. P, 16-May-16					

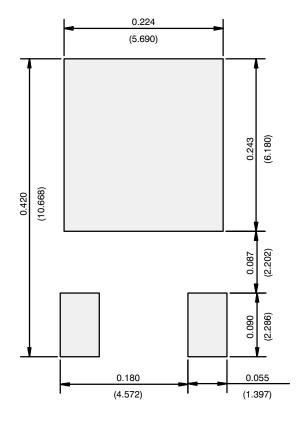
DWG: 5347

Notes

• Dimension L3 is for reference only.



RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads Dimensions in Inches/(mm)

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APPLICATION NOTE



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