

HUF75307S3S-VB Datasheet N-Channel 60 V (D-S) MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$ Max.	$R_{DS(on)}(\Omega)$ Max. $I_D(A)$			
60	0.073 at V _{GS} = 10 V	18	19.8		
60	0.085 at V _{GS} = 4.5 V	15	19.0		

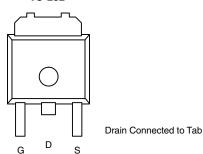
FEATURES

- Trench Power MOSFET
- 100 % R_g and UIS Tested
- Material categorization:

 For definitions of compliance please see

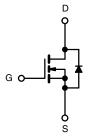






APPLICATIONS

- DC/DC Converters
- DC/AC Inverters
- Motor Drives



N-Channel MOSFET

ABSOLUTE MAXIMUM RA	111143 (1C = 25 C, unless 0	rineiwise noteu)		1	
Parameter		Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	60	V		
Gate-Source Voltage	V _{GS}	± 20	v		
Continuous Drain Current	T _C = 25 °C		18	٨	
Continuous Drain Current	T _C = 70 °C	I _D	14		
Pulsed Drain Current (t = 300 μs)	I _{DM}	25	Α		
Avalanche Current		I _{AS}	15		
Single Avalanche Energy ^a	L = 0.1 mH	E _{AS}	11.25	mJ	
Maximum Power Dissipation ^a	T _C = 25 °C	В	41.7 ^b	w	
Maximum i ower Dissipation	T _A = 25 °C ^c	P _D	2.1		
Operating Junction and Storage Temperature	erature Range	T _J , T _{stg}	- 55 to 150	°C	

THERMAL RESISTANCE RATINGS						
Parameter	Symbol	Limit	Unit			
Junction-to-Ambient (PCB Mount) ^c	R _{thJA}	60	°C/W			
Junction-to-Case (Drain)	R _{thJC}	3	C/VV			

Notes:

- a. Duty cycle \leq 1 %.
- b. See SOA curve for voltage derating.
- c. When mounted on 1" square PCB (FR-4 material).
- d. Base on T_C = 25 °C.

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Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	60			V
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1.0		3.0	V
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 250	nA
		V _{DS} = 60 V, V _{GS} = 0 V			1	μΑ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 150 °C			250	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 10 \text{ V}, V_{GS} = 10 \text{ V}$	20			Α
During Courses Co. Otata Davidana		V _{GS} = 10 V, I _D = 6.6 A		0.073		Ω
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 6 A		0.085		
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 6.6 A		25		S
Dynamic ^b	<u> </u>					
Input Capacitance	C _{iss}			660		pF
Output Capacitance	C _{oss}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		85		
Reverse Transfer Capacitance	C _{rss}			40		
Total Gate Charge ^c	Qg			19.8	30	nC
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 6.6 \text{ A}$		3.6		
Gate-Drain Charge ^c	Q _{gd}			4.1		
Gate Resistance	R _q	f = 1 MHz	0.4	2	4	Ω
Turn-On Delay Time ^c	t _{d(on)}			8	16	
Rise Time ^c	t _r	$V_{DD} = 30 \text{ V}, R_{I} = 9.6 \Omega$		11	20	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 5.2 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 1 \Omega$		18	27	
Fall Time ^c	t _f			5	10	
Turn-On Delay Time ^c	t _{d(on)}			38	57	ns
Rise Time ^c	t _r	$V_{DD} = 30 \text{ V}, R_1 = 9.6 \Omega$		58	87	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 5.2 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_g = 1 \Omega$		18	27	
Fall Time ^c	t _f			8	16	
Drain-Source Body Diode Ratings a	nd Characteri	stics ^b T _C = 25 °C				
Continuous Current	Is				18	
Pulsed Current	I _{SM}				25	Α
Forward Voltage ^a	V _{SD}	I _F = 5.2 A, V _{GS} = 0 V		0.8	1.5	V
Reverse Recovery Time	t _{rr}			34	51	ns
Peak Reverse Recovery Current	I _{RM(REC)}	I _F = 5.2 A, dI/dt = 100 A/μs		3	5	Α
Reverse Recovery Charge	Q _{rr}			50	75	nC

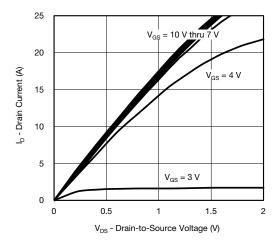
Notes:

- a. Pulse test; pulse width \leq 300 $\mu s,$ duty cycle \leq 2 %.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

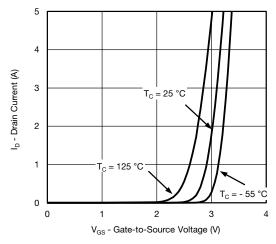
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



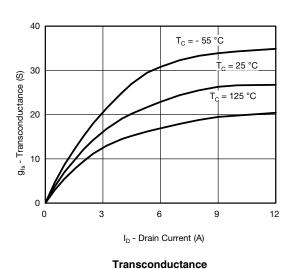
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Output Characteristics

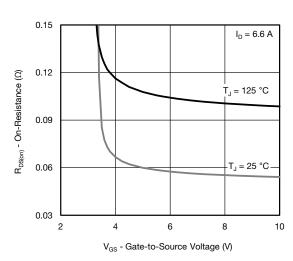


Transfer Characteristics

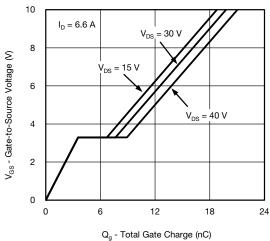


0.10 0.09 0.08 0.08 0.07 0.07 0.06 0.04 0 5 10 15 20 25 I_D - Drain Current (A)

On-Resistance vs. Drain Current



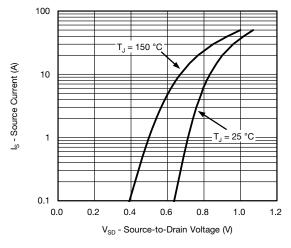
On-Resistance vs. Gate-to-Source Voltage



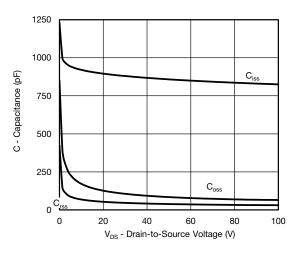
Gate Charge



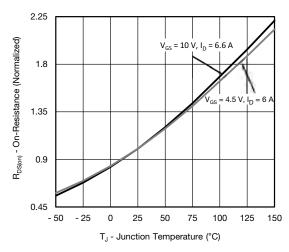
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Source-Drain Diode Forward Voltage

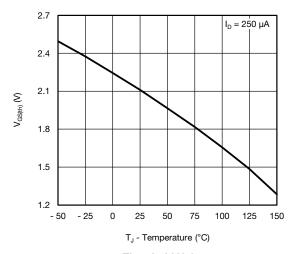


Capacitance

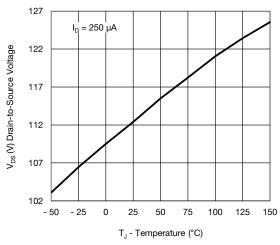


On-Resistance vs. Junction Temperature

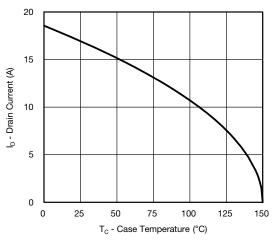
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Threshold Voltage



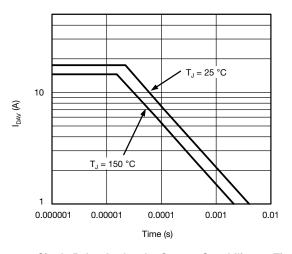
Drain Source Breakdown vs. Junction Temperature

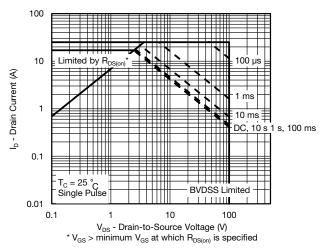


Current Derating



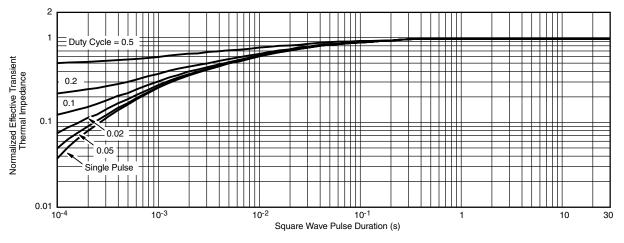
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)





Single Pulse Avalanche Current Capability vs. Time





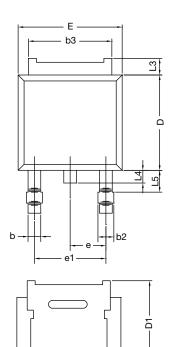
Normalized Thermal Transient Impedance, Junction-to-Case

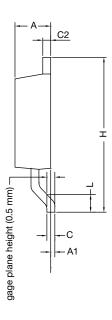
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TO-252AA Case Outline





	MILLIMETERS		INCHES		
DIM.	MIN.	MAX.	MIN.	MAX.	
А	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					

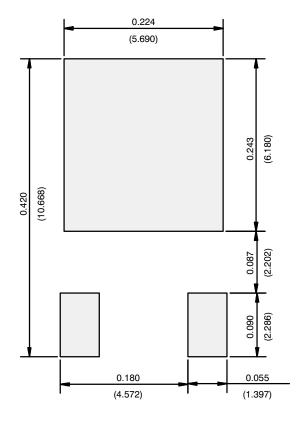
DWG: 5347 Notes

• Dimension L3 is for reference only.



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RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads Dimensions in Inches/(mm)



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