

SH8K12-VB Datasheet **Dual N-Channel 30-V (D-S) MOSFET**

PRODUCT SUMMARY						
V _{DS} (V)	$R_{DS(on)}(\Omega)$	I _D (A)	Q _g (Typ.)			
30	0.022 at V _{GS} = 10 V	6.8	15 nC			
30	0.026 at V _{GS} = 4.5 V	6.0	10110			

SO-8 D_1 G₁ D_2

Top View

FEATURES

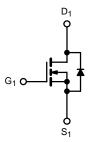
- Halogen-free According to IEC 61249-2-21 Definition
- Trench Power MOSFET
- 100 % UIS Tested
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC

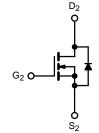


COMPLIANT HALOGEN **FREE**

APPLICATIONS

- Set Top Box
- Low Current DC/DC





N-Channel MOSFET

N-Channel MOSFET

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage		V _{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
	T _C = 25 °C		6.8 ^a	
Continuous Drain Current (T _{.I} = 150 °C)	T _C = 70 °C]	5.6	
Continuous Brain Gunerit (1) = 100 G)	T _A = 25 °C	l _D	6.2 ^{b, c}	
	T _A = 70 °C	1 -	5.2 ^{b, c}	Α
Pulsed Drain Current	I _{DM}	30	^	
Castinuara Carras Brain Binda Corrant	T _C = 25 °C	l-	2.25	
Continuous Source-Drain Diode Current	T _A = 25 °C	ls –	1.48 ^{b, c}	
Single Pulse Avalanche Current	L = 0.1 mH	I _{AS}	5	
Single Pulse Avalanche Energy	L=0.11IIII	E _{AS}	1.25	mJ
	T _C = 25 °C		2.7	
Maximum Dawar Dissination	T _C = 70 °C	P _D	1.77	W
Maximum Power Dissipation	T _A = 25 °C		1.78 ^{b, c}	VV
	T _A = 70 °C	1	1.14 ^{b, c}	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{a, c, d}	t ≤ 10 s	R _{thJA}	58	70	°C/W	
Maximum Junction-to-Foot (Drain)	Steady State	$R_{th,IF}$	38	45	7 0/11	

Notes:

- a. Package limited, T_C = 25 °C.
 b. Surface Mounted on 1" x 1" FR4 board.
- d. Maximum under Steady State conditions is 110 °C/W.



Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit
Static			•			•
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	30			V
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	I _D = 250 μA		32		mV/°C
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	I _D = 250 μA		- 5.0		
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}$, $I_{D} = 250 \mu A$	1.0		2.5	V
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA
Zara Oata Valla va Daria Oamaal	I _{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}$			1	
Zero Gate Voltage Drain Current		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C			10	μA
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	10			Α
	5	$V_{GS} = 10 \text{ V, } I_D = 5 \text{ A}$		0.022		Ω
Drain-Source On-State Resistance ^a	R _{DS(on)}	$V_{GS} = 4.5 \text{ V}, I_D = 4 \text{ A}$		0.026		
Forward Transconductance ^a	g _{fs}	$V_{DS} = 10 \text{ V}, I_{D} = 5 \text{ A}$		16		S
Dynamic ^b	<u> </u>		1		l	l
Input Capacitance	C _{iss}			586		pF
Output Capacitance	C _{oss}	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		117		
Reverse Transfer Capacitance	C _{rss}			55		
Total Gate Charge	Q _g	$V_{DS} = 15 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 5 \text{ A}$		15		nC
				3.7	5.6	
Gate-Source Charge	Q_{gs}	$V_{DS} = 15 \text{ V}, V_{GS} = 4.5 \text{ V}, I_{D} = 5 \text{ A}$		1.4		
Gate-Drain Charge	Q_{gd}			1.05		
Gate Resistance	R_g	f = 1 MHz	0.8	4.3	8.6	Ω
Turn-On Delay Time	t _{d(on)}			12	24	
Rise Time	t _r	V_{DD} = 15 V, R_L = 3 Ω		55	100	
Turn-Off Delay Time	t _{d(off)}	$I_D\cong 5$ A, V_{GEN} = 4.5 V, R_g = 1 Ω		11	22	
Fall Time	t _f			8	16	
Turn-On Delay Time	t _{d(on)}			4	8	ns
Rise Time	t _r	V_{DD} = 15 V, R_L = 3 Ω		9	18	
Turn-Off Delay Time	t _{d(off)}	$I_D\cong 5$ A, V_{GEN} = 10 V, R_g = 1 Ω		10	20	
Fall Time	t _f			6	12	
Drain-Source Body Diode Characteristic	s					_
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			2.25	۸
Pulse Diode Forward Current	I _{SM}				24	Α
Body Diode Voltage	V_{SD}	I _S = 2 A, V _{GS} = 0 V		0.8	1.2	V
Body Diode Reverse Recovery Time	t _{rr}			11	20	ns
Body Diode Reverse Recovery Charge	Q _{rr}	L _ E A dl/dt _ 100 A/::2 T _ 25 °C		4	8	nC
Reverse Recovery Fall Time	ta	$I_F = 5 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, T_J = 25 °\text{C}$		7		
Reverse Recovery Rise Time	se Recovery Rise Time t _b			4		ns

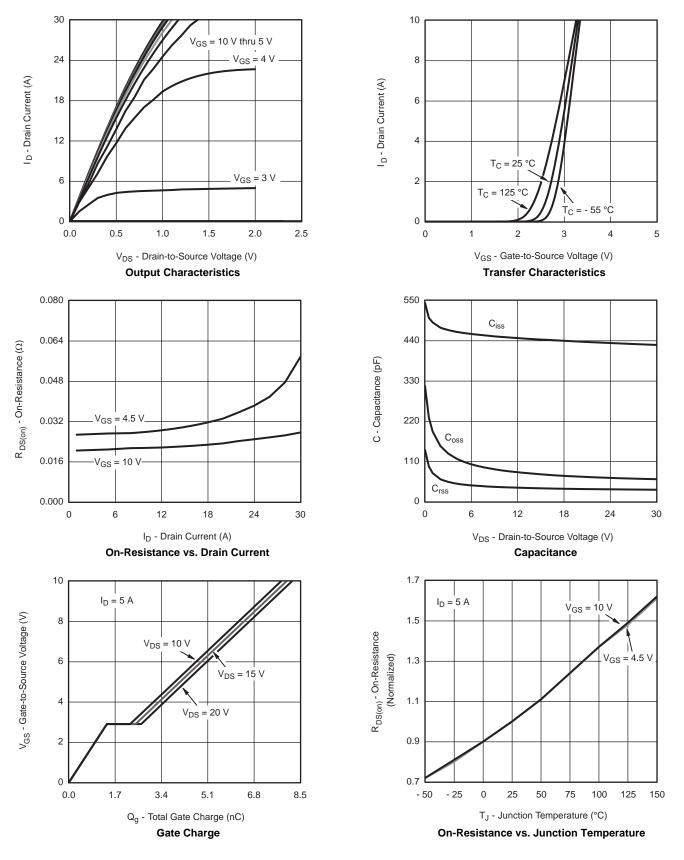
Notes:

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

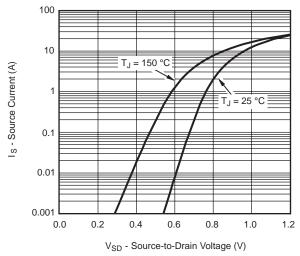
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

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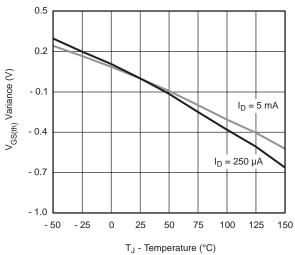




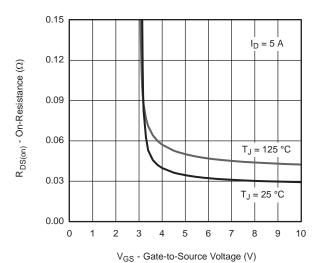




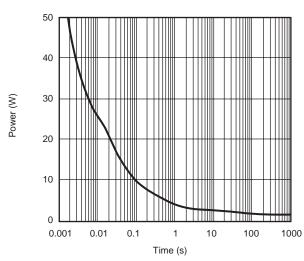
Source-Drain Diode Forward Voltage



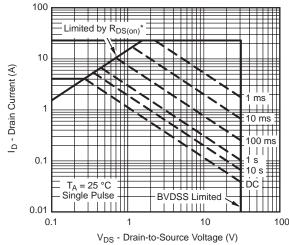
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



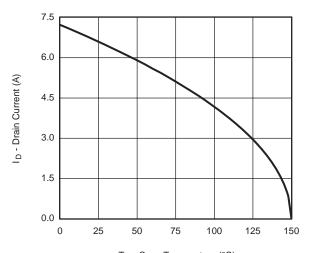
Single Pulse Power



* V_{GS} > minimum V_{GS} at which R_{DS(on)} is specified

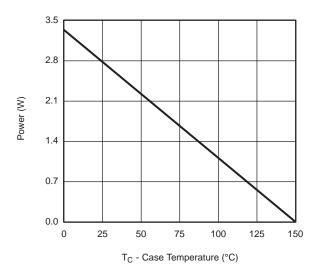
Safe Operating Area, Junction-to-Ambient

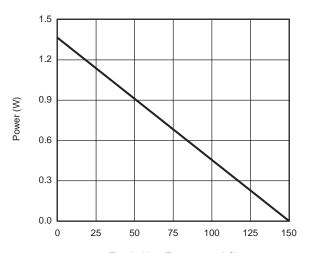




T_C - Case Temperature (°C)

Current Derating*





T_A - Ambient Temperature (°C)

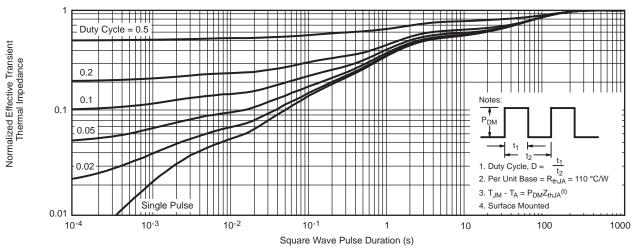
Power, Junction-to-Foot

Power, Junction-to-Ambient

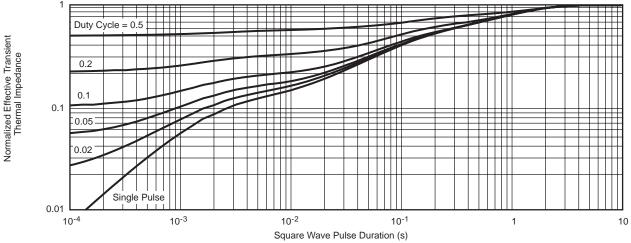
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^{*} The power dissipation P_D is based on $T_{J(max)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.





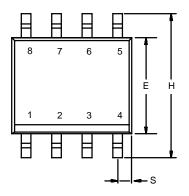
Normalized Thermal Transient Impedance, Junction-to-Ambient

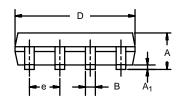


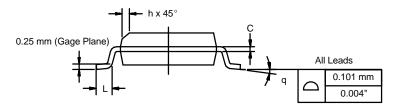
Normalized Thermal Transient Impedance, Junction-to-Foot



SOIC (NARROW): 8-LEADJEDEC Part Number: MS-012







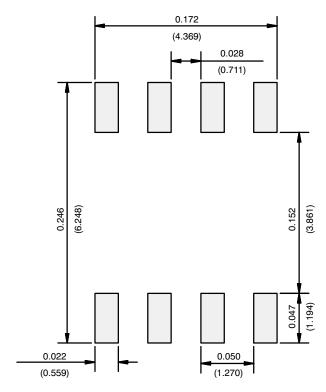
	MILLIMETERS		LLIMETERS INCHES		
DIM	Min	Max	Min	Max	
Α	1.35	1.75	0.053	0.069	
A ₁	0.10	0.20	0.004	0.008	
В	0.35	0.51	0.014	0.020	
С	0.19	0.25	0.0075	0.010	
D	4.80	5.00	0.189	0.196	
E	3.80	4.00	0.150	0.157	
е	1.27 BSC		0.050 BSC		
Н	5.80	6.20	0.228	0.244	
h	0.25	0.50	0.010	0.020	
L	0.50	0.93	0.020	0.037	
q	0°	8°	0°	8°	
S	0.44	0.64	0.018	0.026	
FCN: C-06527-Rev. I. 11-Sep-06					

ECN: C-06527-Rev. I, 11-Sep-06

DWG: 5498



RECOMMENDED MINIMUM PADS FOR SO-8



Recommended Minimum Pads Dimensions in Inches/(mm)



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