

N- and P-Channel 30 V (D-S) MOSFET

PRODUCT SUMMARY

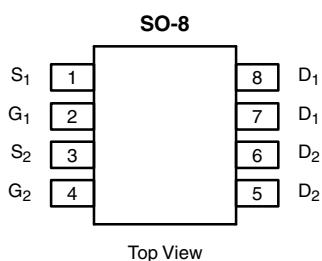
	V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
N-Channel	30	0.053 at $V_{GS} = 10$ V	4.9
		0.075 at $V_{GS} = 4.5$ V	4.1
P-Channel	- 30	0.080 at $V_{GS} = - 10$ V	- 3.9
		0.135 at $V_{GS} = - 4.5$ V	- 3.0

FEATURES

- Halogen-free According to IEC 61249-2-21 Available
- TrenchFET® Power MOSFETs
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC

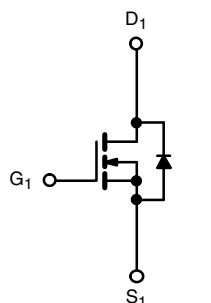


RoHS
COMPLIANT
HALOGEN
FREE
Available

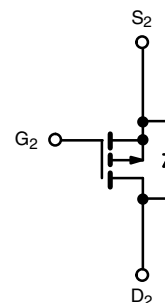


Ordering Information:

Si4532ADY-T1-E3 (Lead (Pb-free)
Si4532ADY-T1-GE3 (Lead (Pb-free and Halogen-free)



N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)

Parameter		Symbol	N-Channel		P-Channel		Unit
			10 s	Steady State	10 s	Steady State	
Drain-Source Voltage		V _{DS}	30		- 30		V
Gate-Source Voltage		V _{GS}	± 20		± 20		
Continuous Drain Current (T _J = 150 °C) ^a	T _A = 25 °C	I _D	4.9	3.7	- 3.9	- 3.0	A
	T _A = 70 °C		3.9	2.9	- 3.1	- 2.4	
Pulsed Drain Current		I _{DM}	20				
Continuous Source Current (Diode Conduction) ^a		I _S	1.7	0.94	- 1.7	- 1.0	
Maximum Power Dissipation ^a	T _A = 25 °C	P _D	2	1.13	2	1.2	W
	T _A = 70 °C		1.3	0.73	1.3	0.76	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150				°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	N-Channel		P-Channel		Unit
		Typ.	Max.	Typ.	Max.	
Maximum Junction-to-Ambient ^a	R_{thJA}	55	62.5	54	62.5	°C/W
		90	110	87	105	
Maximum Junction-to-Foot (Drain)	R_{thJF}	40	50	34	45	

Note:

a. Surface mounted on 1" x 1" FR4 board.

SPECIFICATIONS T _J = 25 °C, unless otherwise noted							
Parameter	Symbol	Test Conditions		Min.	Typ.	Max.	Unit
Static							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	1			V
		V _{DS} = V _{GS} , I _D = - 250 μA	P-Ch	- 1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	N-Ch			± 100	nA
		V _{DS} = 0 V, V _{GS} = ± 20 V	P-Ch			± 100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V	N-Ch			1	μA
		V _{DS} = - 30 V, V _{GS} = 0 V	P-Ch			- 1	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C	N-Ch			5	
		V _{DS} = - 30 V, V _{GS} = 0 V, T _J = 55 °C	P-Ch			- 5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	N-Ch	20			A
		V _{DS} ≤ - 5 V, V _{GS} = - 10 V	P-Ch	- 20			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 4.9 A	N-Ch		0.044	0.053	Ω
		V _{GS} = - 10 V, I _D = - 3.9 A	P-Ch		0.062	0.080	
		V _{GS} = 4.5 V, I _D = 4.1 A	N-Ch		0.062	0.075	
		V _{GS} = - 4.5 V, I _D = - 3 A	P-Ch		0.105	0.135	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 4.9 A	N-Ch		11		S
		V _{DS} = - 15 V, I _D = - 2.5 A	P-Ch		5		
Diode Forward Voltage ^a	V _{SD}	I _S = 1.7 A, V _{GS} = 0 V	N-Ch		0.80	1.2	V
		I _S = - 1.7 A, V _{GS} = 0 V	P-Ch		- 0.82	- 1.2	
Dynamic ^b							
Total Gate Charge	Q _g	N-Channel V _{DS} = 10 V, V _{GS} = 10 V, I _D = 4.9 A	N-Ch		8	16	nC
Gate-Source Charge	Q _{gs}		P-Ch		10	20	
Gate-Drain Charge	Q _{gd}	P-Channel V _{DS} = - 4 V, V _{GS} = - 10 V, I _D = - 3.9 A	N-Ch		1.4		
			P-Ch		2		
Gate Resistance ^c	R _g	f = 1 MHz	N-Ch	0.4	1.6	3.2	Ω
			P-Ch	1.5	6.2	12	
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 10 V, R _L = 10 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _g = 6 Ω	N-Ch		12	20	ns
Rise Time	t _r		P-Ch		8	15	
			N-Ch		10	20	
Turn-Off Delay Time	t _{d(off)}		P-Ch		9	18	
		N-Channel V _{DD} = - 10 V, R _L = 10 Ω I _D ≅ - 1 A, V _{GEN} = - 10 V, R _g = 6 Ω	N-Ch		23	45	
Fall Time	t _f	P-Ch		21	40		
		N-Ch		8	15		
Source-Drain Reverse Recovery Time	t _{rr}	P-Ch		10	20		
		I _F = 1.7 A, dI/dt = 100 A/μs	N-Ch		25	40	
		I _F = - 1.7 A, dI/dt = 100 A/μs	P-Ch		27	40	

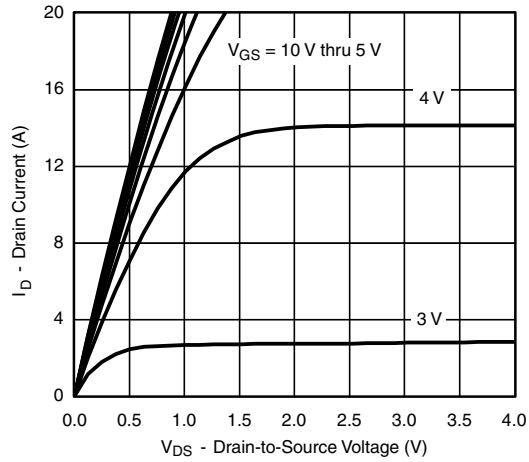
Notes:

a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

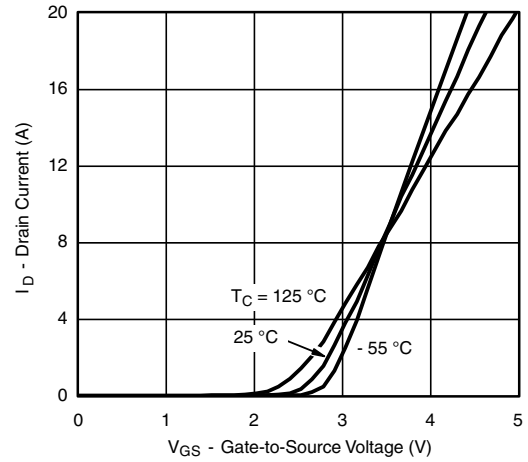
b. Guaranteed by design, not subject to production testing.

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.

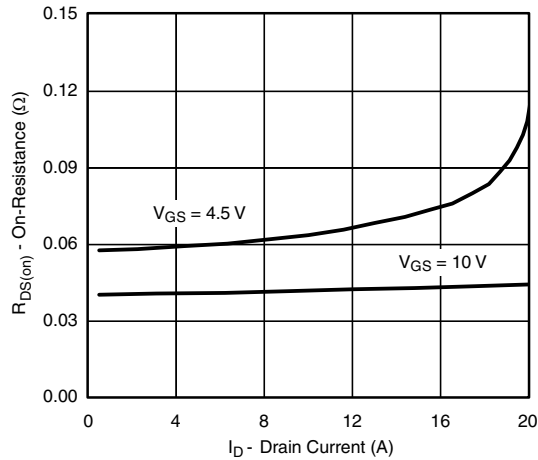
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



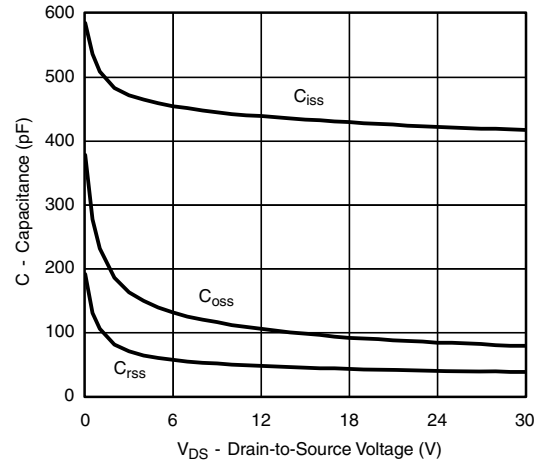
Output Characteristics



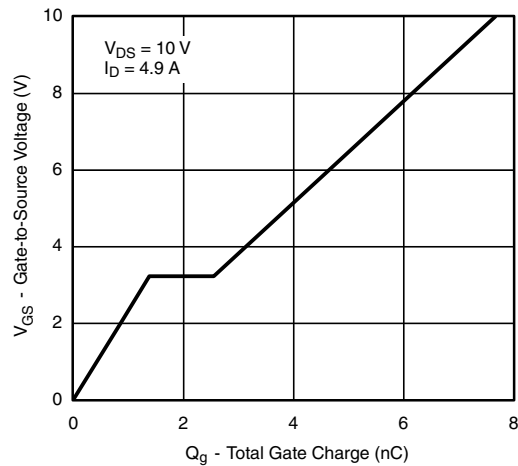
Transfer Characteristics



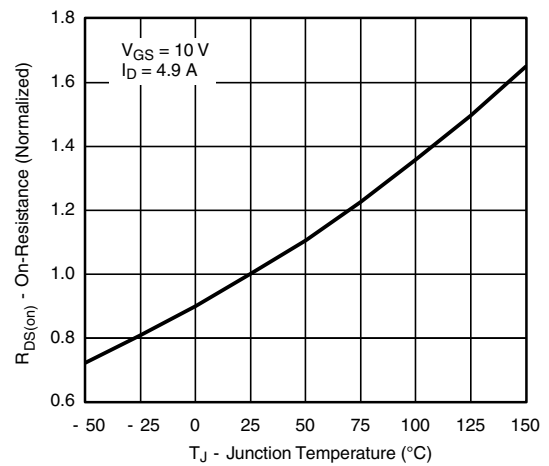
On-Resistance vs. Drain Current



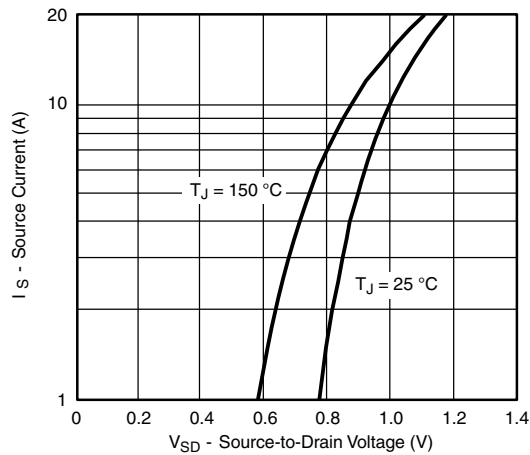
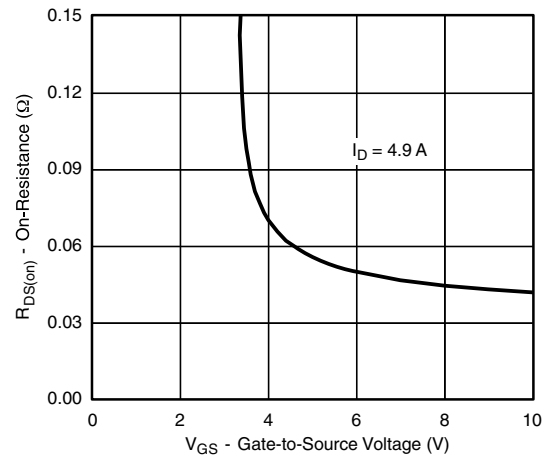
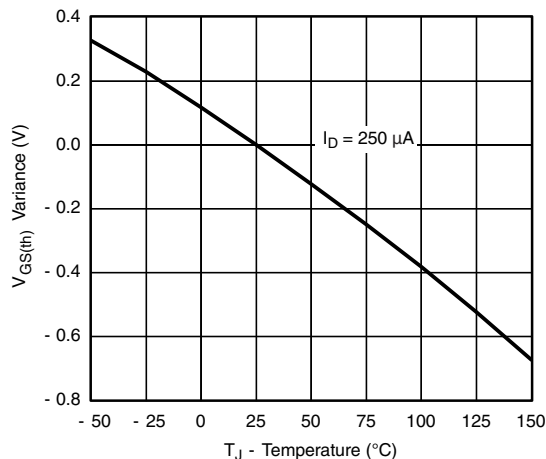
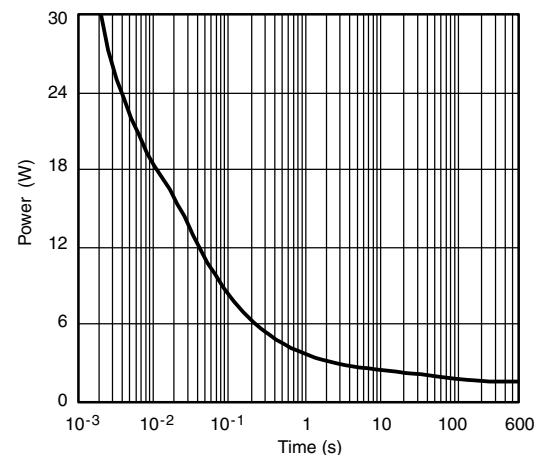
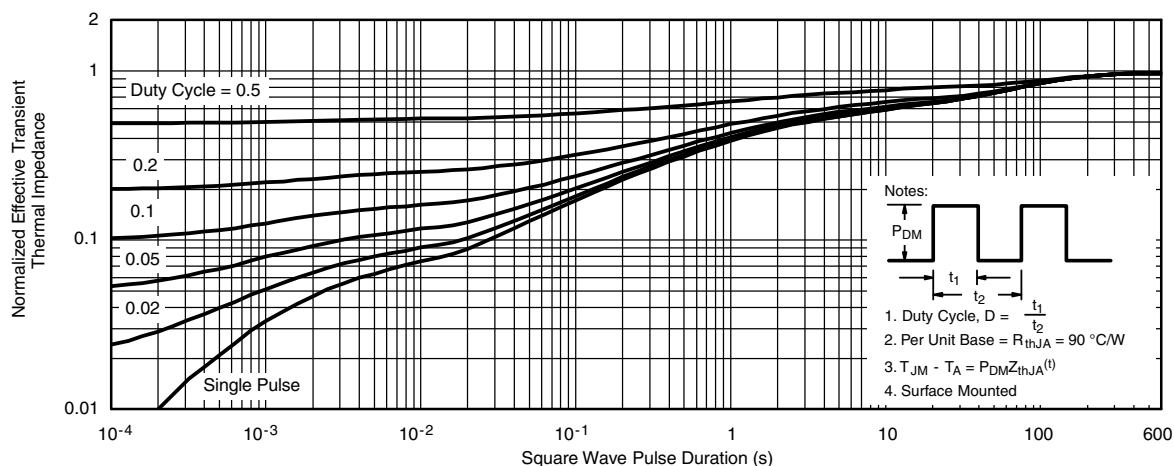
Capacitance



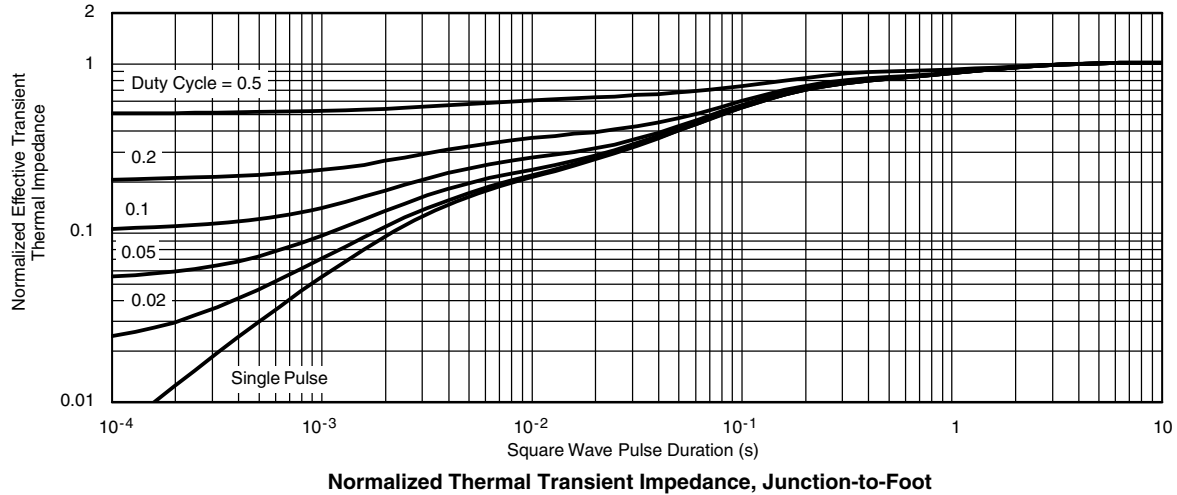
Gate Charge



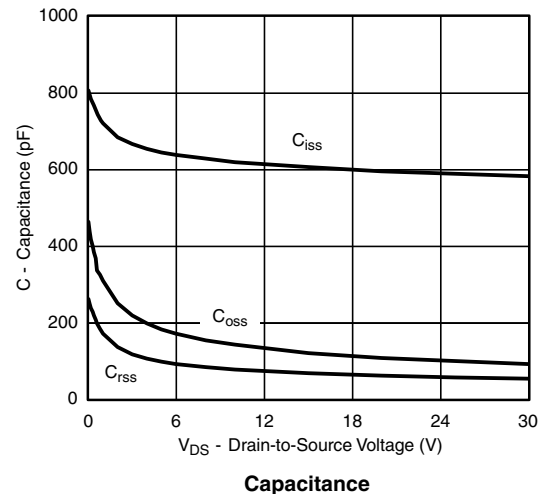
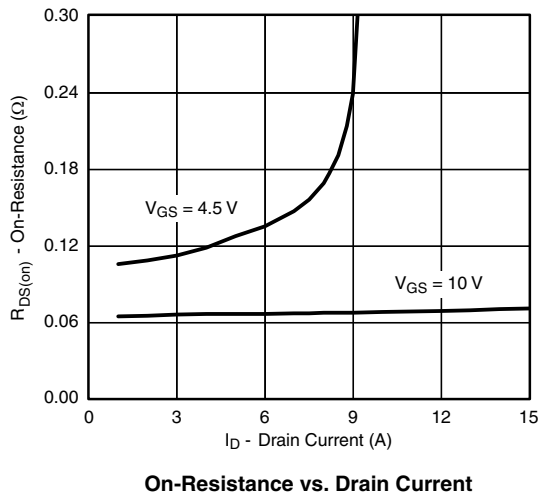
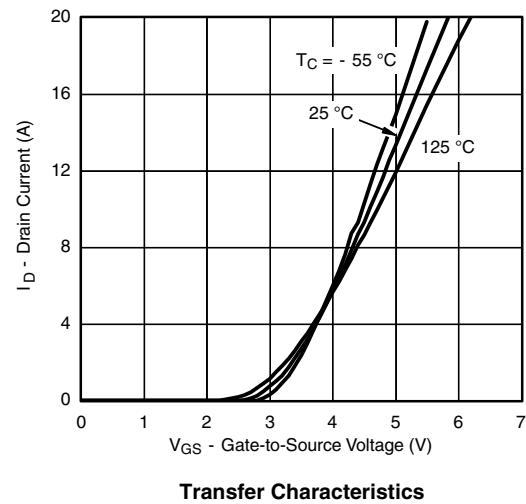
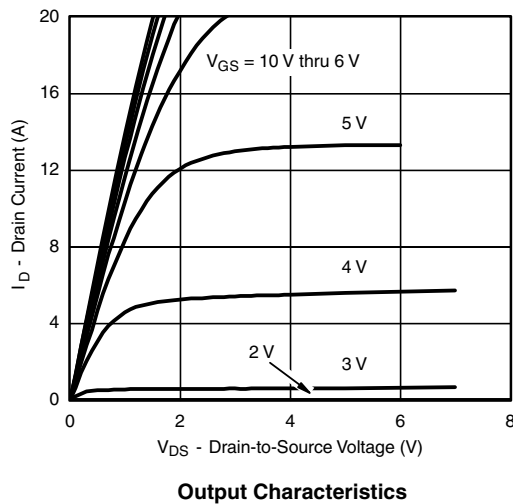
On-Resistance vs. Junction Temperature

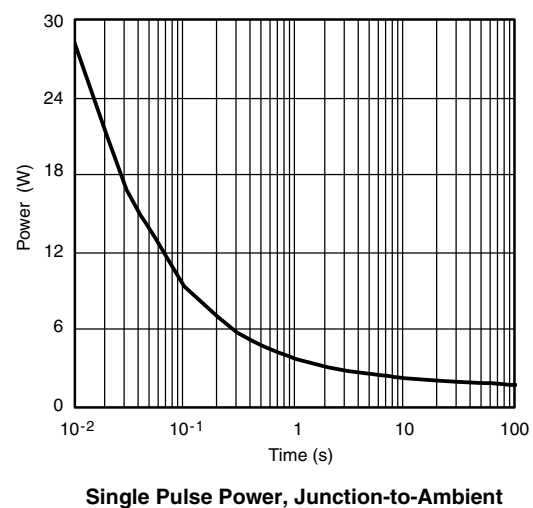
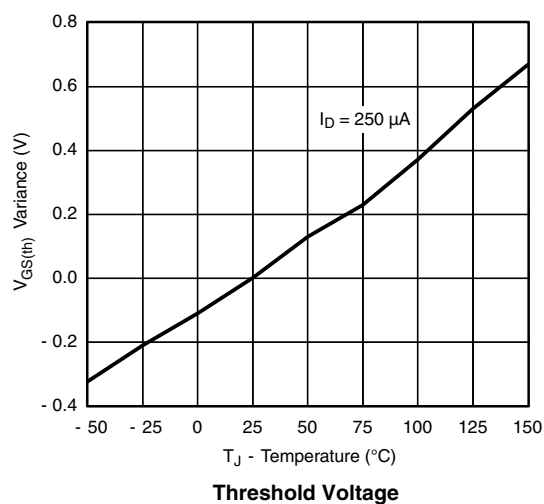
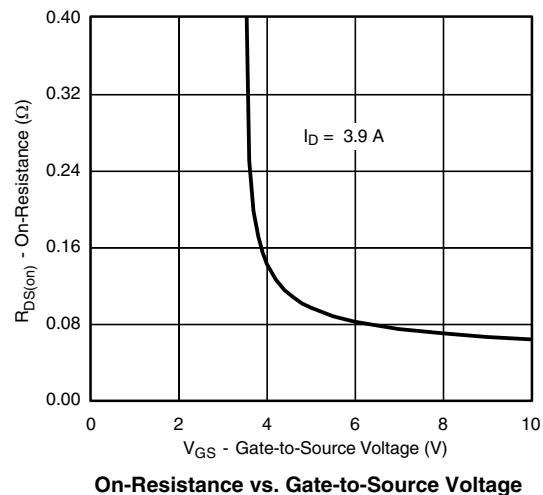
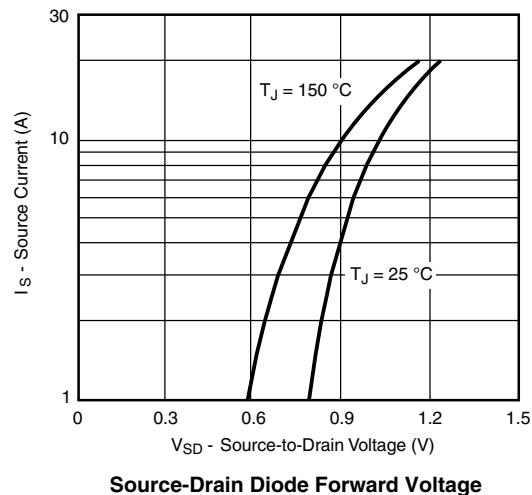
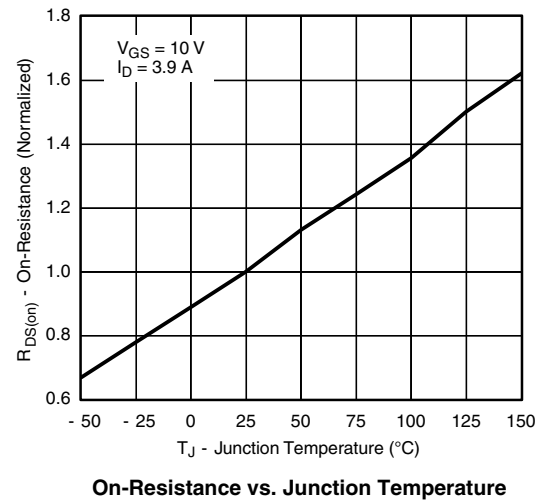
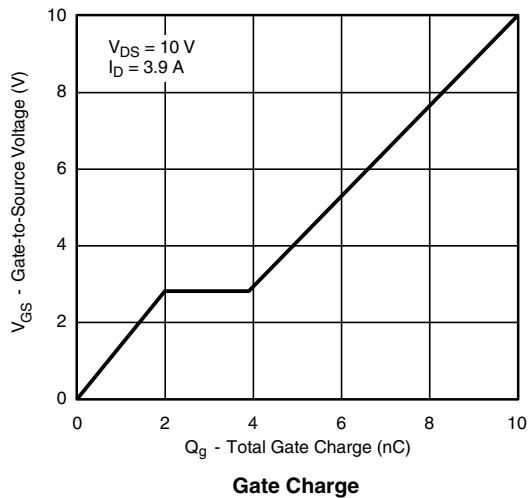
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)**Source-Drain Diode Forward Voltage****On-Resistance vs. Gate-to-Source Voltage****Threshold Voltage****Single Pulse Power****Normalized Thermal Transient Impedance, Junction-to-Ambient**

N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

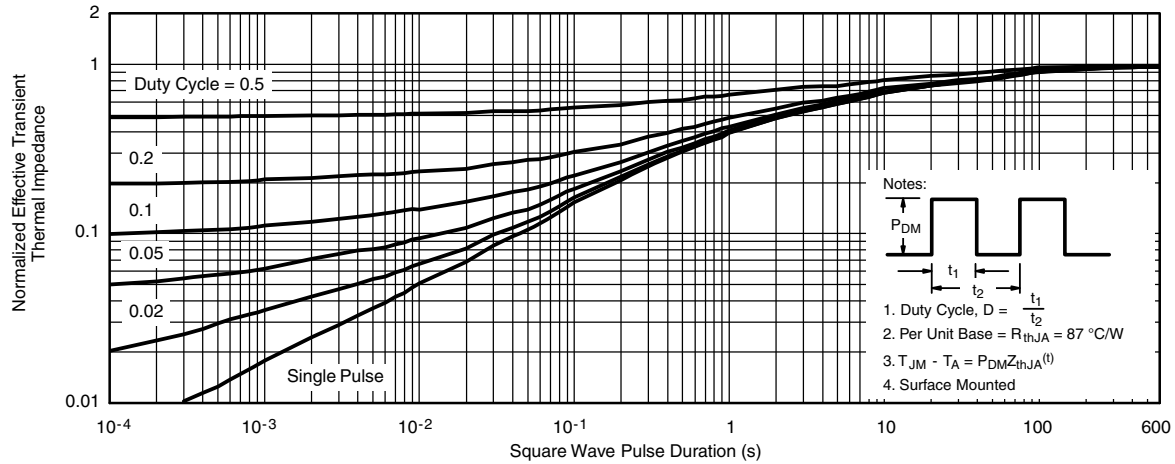


P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

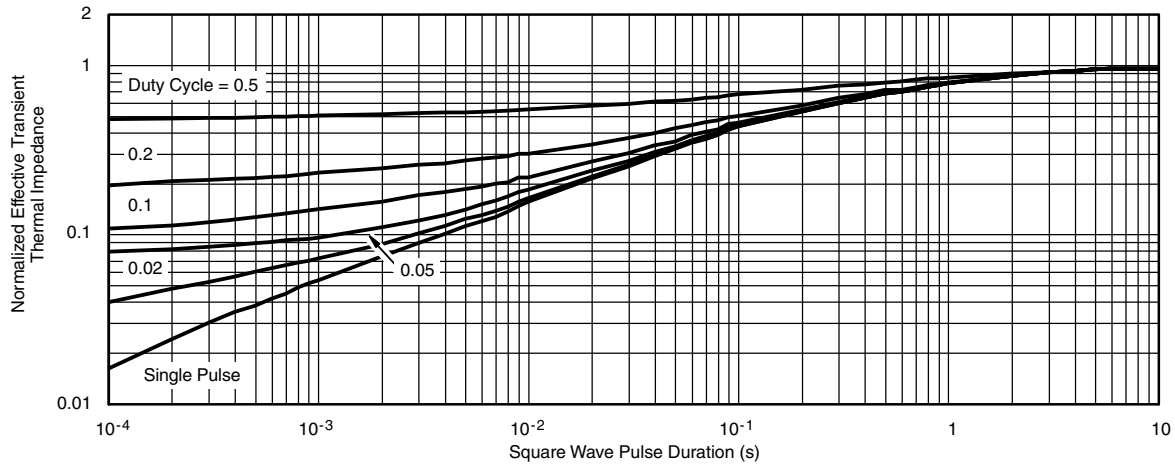


P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient

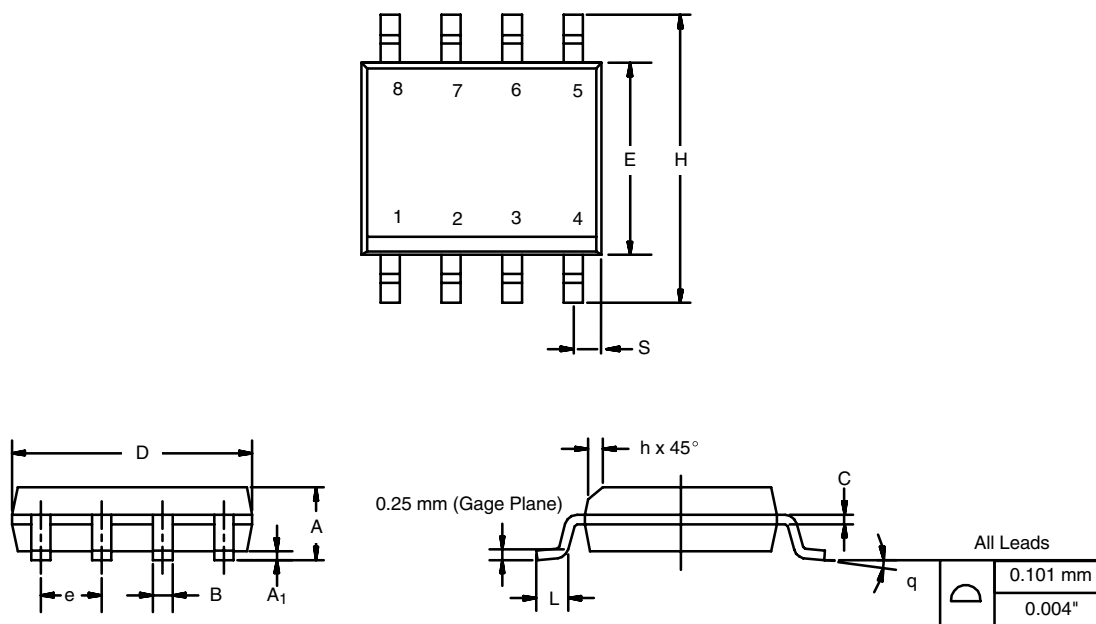


Normalized Thermal Transient Impedance, Junction-to-Foot

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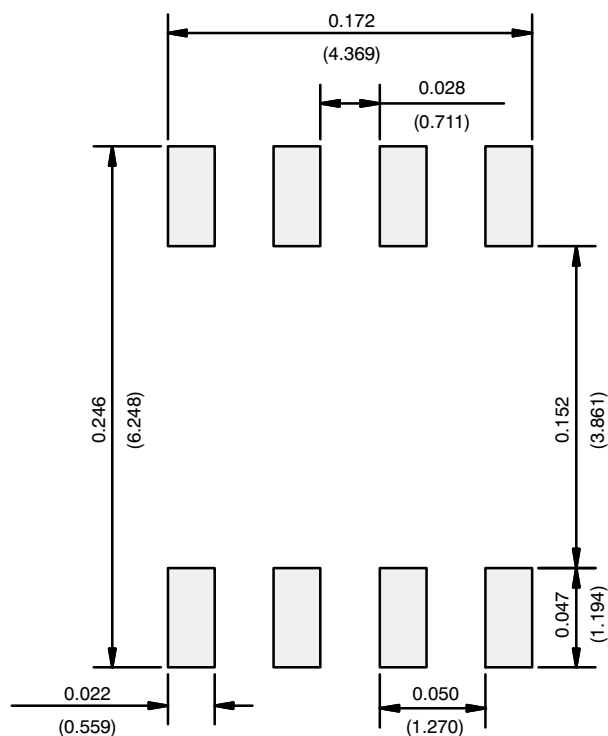
SOIC (NARROW): 8-LEAD

JEDEC Part Number: MS-012



DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	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
e	1.27 BSC		0.050 BSC	
H	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
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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