



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

PRODUCT SUMMARY				
V _{DS} (V)	$R_{DS(on)}(\Omega)$	I _D (A)		
30	0.0135 at V _{GS} = 10 V	10		
30	0.020 at V _{GS} = 4.5 V	8		

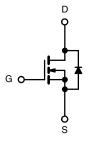
FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFET
- 100 % R_q Tested
- Compliant to RoHS Directive 2002/95/EC



APPLICATIONS

- · Battery Switch
- Load Switch



N-Channel MOSFET

		SO-8	
S	1		8 D
S	2		7 D
S	3		6 D
G	4		5 D
		Top View	

Ordering Information: Si4410BDY-T1-E3 (Lead (Pb)-free)

Si4410BDY-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS T _A = 25 °C, unless otherwise noted						
Parameter		Symbol	10 s	Steady State	Unit	
Drain-Source Voltage		V _{DS}	30		V	
Gate-Source Voltage		V _{GS}	± 20			
Continuous Dunin Courset /T 150 °C)	T _A = 25 °C	- I _D	10	7.5		
Continuous Drain Current (T _J = 150 °C) ^a	T _A = 70 °C		8	6	A	
Pulsed Drain Current (10 µs Pulse Width)		I _{DM}	50		Α	
Continuous Source Current (Diode Conduction) ^a	I _S	2.3	1.26			
	T _A = 25 °C	P _D	2.5	1.4	W	
Maximum Power Dissipation ^a	T _A = 70 °C		1.6	0.9	VV	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150		°C		

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum boration to Ambienta	t ≤ 10 s	R_{thJA}	40	50		
Maximum Junction-to-Ambient ^a	Steady State		70	90	°C/W	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	25	30		

Notes:

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

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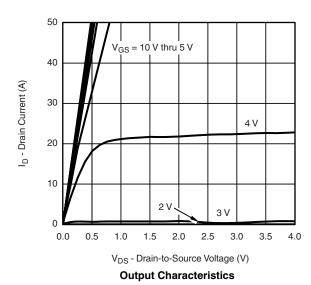
Parameter	Symbol	Test Conditions Min.		Тур.	Max.	Unit
Static	<u>. </u>			<u> </u>		
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$ 1.0		3.0	V
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$		± 100	nA
7 0 1 1/1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	V _{DS} = 30 V, V _{GS} = 0 V			1	μΑ
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 ^{\circ}\text{C}$			5	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	20			Α
5	В	V _{GS} = 10 V, I _D = 10 A		0.011	0.0135	
Drain-Source On-State Resistance ^a	R _{DS(on)}	$V_{GS} = 4.5 \text{ V}, I_D = 5 \text{ A}$		0.0165	0.020	Ω
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 10 A		25		S
Diode Forward Voltage ^a	V _{SD}	$I_S = 2.3 \text{ A}, V_{GS} = 0 \text{ V}$		0.76	1.1	V
Dynamic ^b	L					
Gate Charge	Qg	$V_{DS} = 15 \text{ V}, V_{GS} = 5 \text{ V}, I_{D} = 10 \text{ A}$		13	20	
Total Gate Charge	Q _{gt}			25	40	
Gate-Source Charge	Q _{gs}	$V_{DS} = 15 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 10 \text{ A}$		5.5		nC
Gate-Drain Charge	Q_{gd}			3.7		
Gate Resistance	R_g	f = 1 MHz	0.5	1.6	2.7	Ω
Turn-On Delay Time	t _{d(on)}			10	15	
Rise Time	t _r	V_{DD} = 25 V, R_L = 25 Ω		10	15	1
Turn-Off Delay Time	t _{d(off)}	$I_D\cong$ 1 A, V_{GEN} = 10 V, R_g = 6 Ω		40	60	ns
Fall Time	t _f			15	25	113
Source-Drain Reverse Recovery Time	t _{rr}	$I_F = 2.3 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}$		35	70	

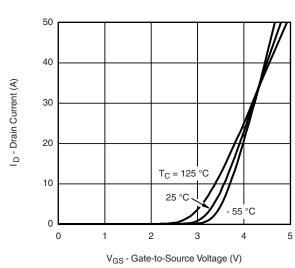
Notes:

- 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.

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





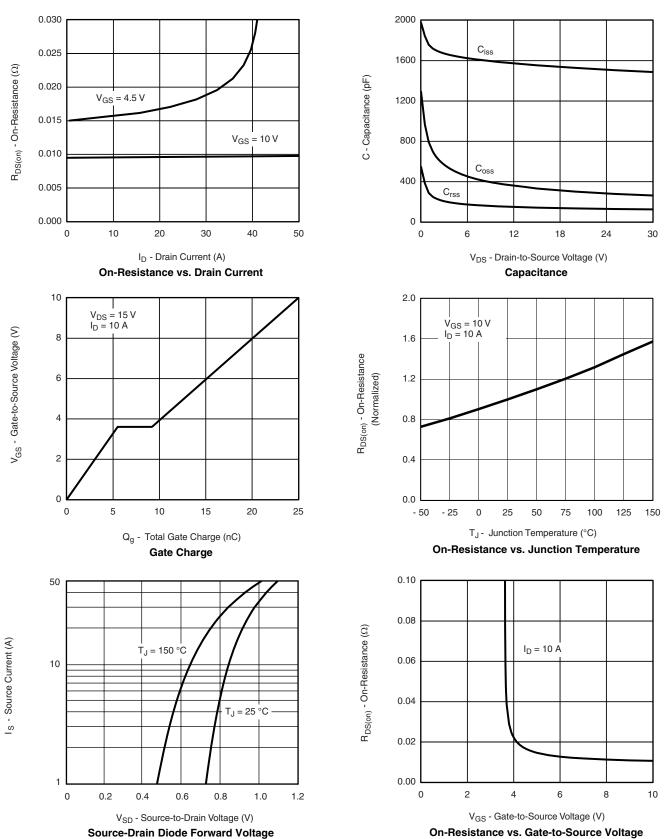
Transfer Characteristics







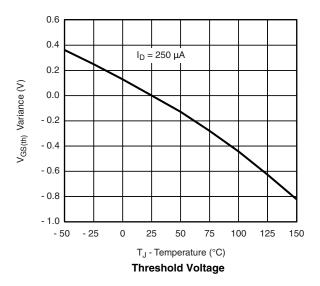
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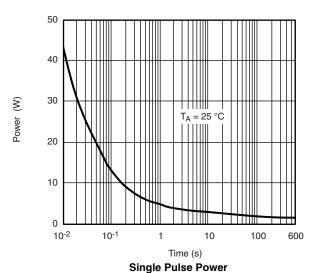


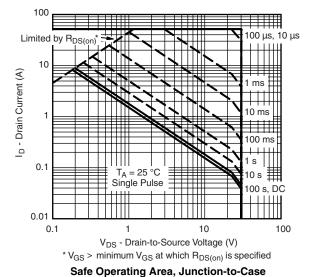
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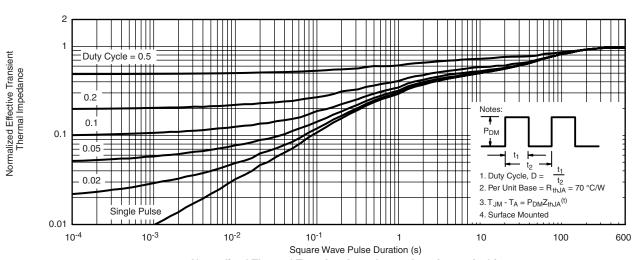
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TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





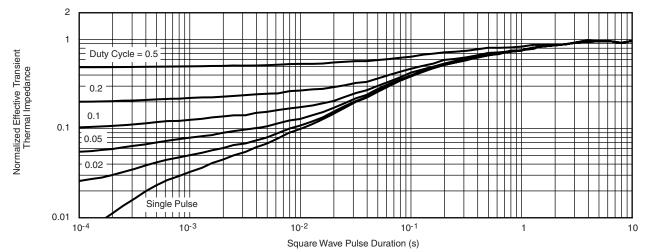




Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



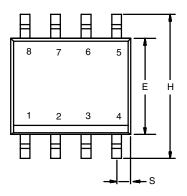
Normalized Thermal Transient Impedance, Junction-to-Foot

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Document Number: 72211 S09-0705-Rev. D, 27-Apr-09



SOIC (NARROW): 8-LEAD JEDEC Part Number: MS-012







	MILLIM	IETERS	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		
Е	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		
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DWG: 5498

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RECOMMENDED MINIMUM PADS FOR SO-8



Recommended Minimum Pads Dimensions in Inches/(mm)

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