



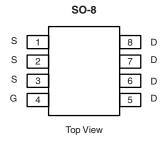
N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}(\Omega)$	I _D (A)			
30	0.0085 at V _{GS} = 10 V	13.5			
	0.0110 at V _{GS} = 4.5 V	11			

FEATURES

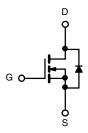
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET[®] Power MOSFET
- 100 % R_q Tested





Ordering Information: Si4420BDY-T1-E3 (Lead (Pb)-free)

Si4420BDY-T1-GE3 (Lead (Pb)-free and Halogen-free)



N-Channel MOSFET

Parameter		Symbol	10 s	Steady State	Unit
Drain-Source Voltage		V _{DS}	30		V
Gate-Source Voltage		V _{GS}	± 20		V
Outiline Dail Out 1/T 450 00\2	T _A = 25 °C	- I _D	13.5	9.5	
Continuous Drain Current (T _J = 150 °C) ^a	T _A = 70 °C		10.8	7.5	
Pulsed Drain Current		I _{DM}	50		Α
Continuous Source Current (Diode Conduction) ^a		I _S	2.3	1.26	
Single Pulse Avalanche Current	L = 0.1 mH	I _{AS}	20		
Avalanche Energy	L = 0.1 IIII	E _{AS}	20		mJ
Mariana Barra Biraira di ang	T _A = 25 °C	P _D	2.5	1.4	W
Maximum Power Dissipation ^a	T _A = 70 °C	' D	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
Manifesture Installanta Anakianta	t < 10 s	R _{thJA}	40	50	
Maximum Junction-to-Ambient ^a	Steady State	□thJA	70	90	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R _{thJF}	23	28	

Notes

a. Surface Mounted on FR4 board, $t \leq 10 \ s.$

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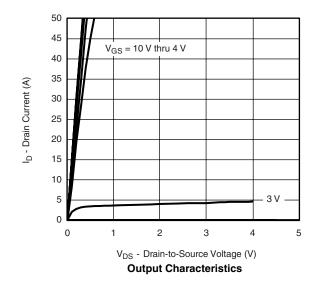
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static							
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1.0		3.0	V	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zero Gate Voltage Drain Current	lana	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}$			1	μΑ	
Zero Gate Voltage Drain Current	IDSS	V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C			5		
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	30			Α	
D : 0	D	V _{GS} = 10 V, I _D = 13.5 A		0.007	0.0085	0	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 11 A		0.009	0.0110	Ω	
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 13.5 A		50		S	
Diode Forward Voltage ^a	V_{SD}	I _S = 2.3 A, V _{GS} = 0 V		0.75	1.1	V	
Dynamic ^b							
Gate Charge	Q_g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 13.5 A		16	25		
Total Gate Charge	Q _{gt}			31	50	nC	
Gate-Source Charge	Q_{gs}	$V_{DS} = 15 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 13.5 \text{ A}$		6.6		110	
Gate-Drain Charge	Q_{gd}			4.0		ı	
Gate Resistance	R_g		0.5	1.0	1.5	Ω	
Turn-On Delay Time	t _{d(on)}			15	25		
Rise Time	t _r	V_{DD} = 15 V, R_L = 15 Ω		11	18		
Turn-Off Delay Time	t _{d(off)}	$I_D \cong 1 \text{ A, V}_{GEN} = 10 \text{ V, R}_g = 6 \Omega$		40	60	ns	
Fall Time	t _f			12	20		
Source-Drain Reverse Recovery Time	t _{rr}	$I_F = 2.3 \text{ A}, dI/dt = 100 \text{ A/}\mu\text{s}$		30	50		

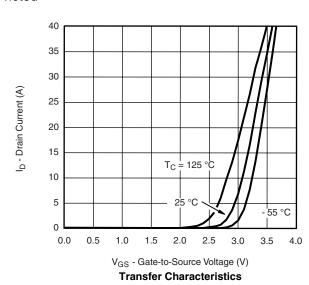
Notes:

- 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



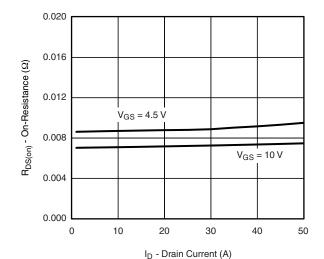




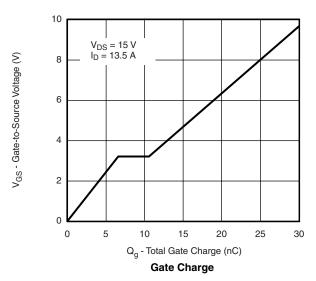


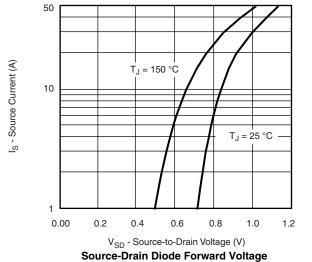


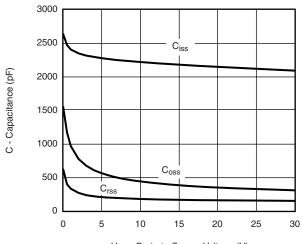
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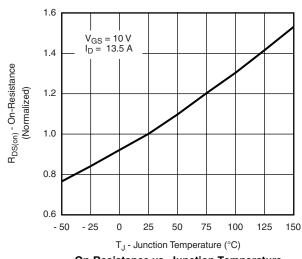
On-Resistance vs. Drain Current



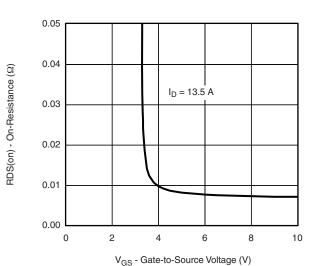




V_{DS} - Drain-to-Source Voltage (V) **Capacitance**



On-Resistance vs. Junction Temperature

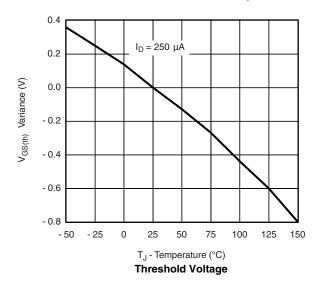


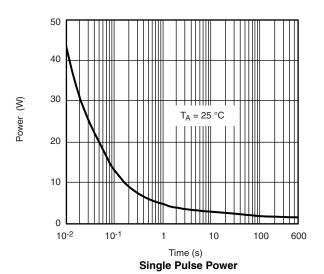
On-Resistance vs. Gate-to-Source Voltage

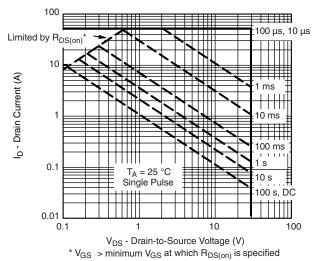
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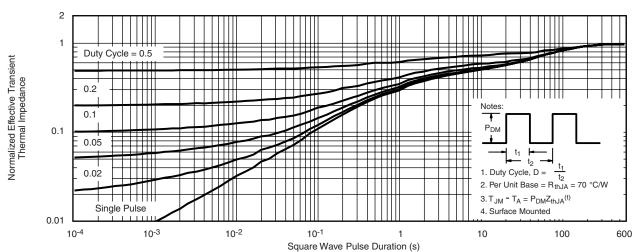
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted







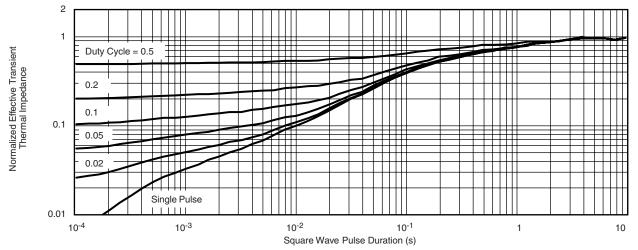
Safe Operating Area, Junction-to-Case



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

DWG: 5498

Document Number: 71192 www.vishay.com 11-Sep-06



RECOMMENDED MINIMUM PADS FOR SO-8



Recommended Minimum Pads Dimensions in Inches/(mm)

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