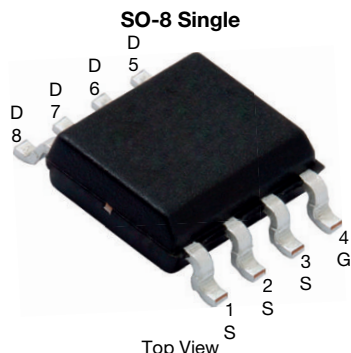


N-Channel 150 V (D-S) MOSFET



Marking code: 4848A

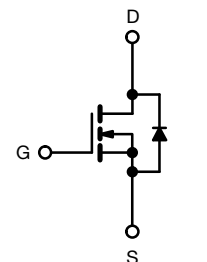
PRODUCT SUMMARY	
V_{DS} (V)	150
$R_{DS(on)}$ max. (Ω) at $V_{GS} = 10$ V	0.084
$R_{DS(on)}$ max. (Ω) at $V_{GS} = 4.5$ V	0.133
Q_g typ. (nC)	4.4
I_D (A) ^d	5.5
Configuration	Single

FEATURES

- ThunderFET® power MOSFET
- 100 % R_g tested
- Material categorization:
for definitions of compliance please see
www.vishay.com/doc?99912

APPLICATIONS

- DC/DC converters
- Boost converters
- LED backlighting
- PD switch
- Load switch


RoHS
COMPLIANT
HALOGEN
FREE


N-Channel MOSFET

ORDERING INFORMATION	
Package	SO-8
Lead (Pb)-free and halogen-free	Si4848ADY-T1-GE3

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-source voltage		V_{DS}	150	V
Gate-source voltage		V_{GS}	± 20	
Continuous drain current ($T_J = 150$ °C)	$T_C = 25$ °C	I_D	5.5	A
	$T_C = 70$ °C		4.4	
	$T_A = 25$ °C		3.9 ^{a, b}	
	$T_A = 70$ °C		3.1 ^{a, b}	
Pulsed drain current ($t = 100$ μ s)		I_{DM}	20	
Continuous source-drain diode current	$T_C = 25$ °C	I_S	4.2	
	$T_A = 25$ °C		2.1 ^{a, b}	
Single pulse avalanche current	$L = 0.1$ mH	I_{AS}	10	mJ
Single pulse avalanche energy		E_{AS}	5	
Maximum power dissipation	$T_C = 25$ °C	P_D	5	W
	$T_C = 70$ °C		3.2	
	$T_A = 25$ °C		2.5 ^{a, b}	
	$T_A = 70$ °C		1.6 ^{a, b}	
Operating junction and storage temperature range		T_J, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE RATINGS				
PARAMETER		SYMBOL	TYPICAL	MAXIMUM
Maximum junction-to-ambient ^{a, c}	$t \leq 10$ s	R_{thJA}	43	50
Maximum junction-to-foot (drain)	Steady state	R_{thJF}	19	25

Notes

- Surface mounted on 1" x 1" FR4 board
- $t = 10$ s
- Maximum under steady state conditions is 92 °C/W
- $T_C = 25$ °C



SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-source breakdown voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	150	-	-	V
V _{DS} temperature coefficient	ΔV _{DS} /T _J	I _D = 250 μA	-	149	-	mV/°C
V _{GS(th)} temperature coefficient	ΔV _{GS(th)} /T _J		-	-7.1	-	
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2	-	4	V
Gate-source leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	-	-	± 100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = 150 V, V _{GS} = 0 V	-	-	1	μA
		V _{DS} = 150 V, V _{GS} = 0 V, T _J = 70 °C	-	-	10	
On-state drain current ^a	I _{D(on)}	V _{DS} ≤ 10 V, V _{GS} = 10 V	10	-	-	A
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 3.9 A	-	0.070	0.084	Ω
		V _{GS} = 6 V, I _D = 3.1 A	-	0.102	0.133	
Forward transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 3.9 A	-	5	-	S
Dynamic ^b						
Input capacitance	C _{iss}	V _{DS} = 75 V, V _{GS} = 0 V, f = 1 MHz	-	335	-	pF
Output capacitance	C _{oss}		-	70	-	
Reverse transfer capacitance	C _{rss}		-	3	-	
Total gate charge	Q _g	V _{DS} = 75 V, V _{GS} = 10 V, I _D = 3.9 A	-	6.5	9.5	nC
		V _{DS} = 75 V, V _{GS} = 6 V, I _D = 3.9 A	-	4.4	6.6	
Gate-source charge	Q _{gs}		-	1.5	-	
Gate-drain charge	Q _{gd}		-	1.9	-	
Gate resistance	R _g	f = 1 MHz	0.2	1.1	2.2	Ω
Turn-on delay time	t _{d(on)}	V _{DD} = 75 V, R _L = 24.2 Ω, I _D ≅ 3.1 A, V _{GEN} = 10 V, R _g = 1 Ω	-	8	16	ns
Rise time	t _r		-	22	35	
Turn-off delay time	t _{d(off)}		-	12	24	
Fall time	t _f		-	22	35	
Turn-on delay time	t _{d(on)}	V _{DD} = 75 V, R _L = 24.2 Ω, I _D ≅ 3.1 A, V _{GEN} = 7.5 V, R _g = 1 Ω	-	10	20	
Rise time	t _r		-	22	40	
Turn-off delay time	t _{d(off)}		-	10	20	
Fall time	t _f		-	20	40	
Drain-Source Body Diode Characteristics						
Continuous source-drain diode current	I _S	T _C = 25 °C	-	-	2.1	A
Pulse diode forward current	I _{SM}		-	-	20	
Body diode voltage	V _{SD}	I _S = 3.1 A, V _{GS} = 0 V	-	0.85	1.2	V
Body diode reverse recovery time	t _{rr}	I _F = 3.1 A, di/dt = 100 A/μs, T _J = 25 °C	-	57	86	ns
Body diode reverse recovery charge	Q _{rr}		-	110	165	nC
Reverse recovery fall time	t _a		-	43	-	ns
Reverse recovery rise time	t _b		-	14	-	

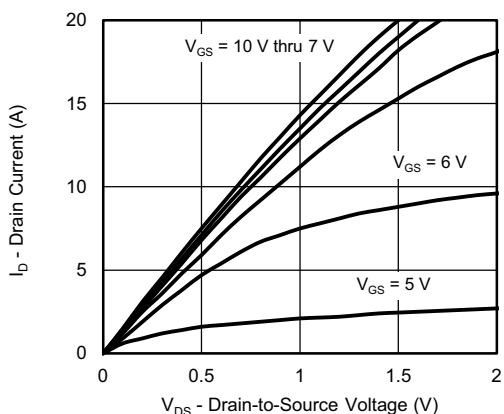
Notes

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

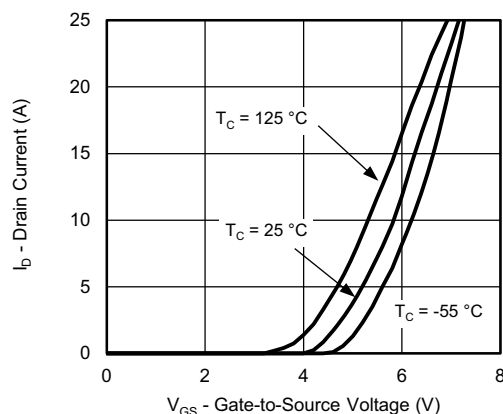
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



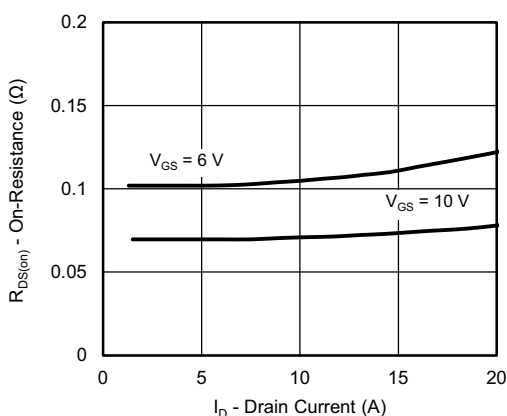
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



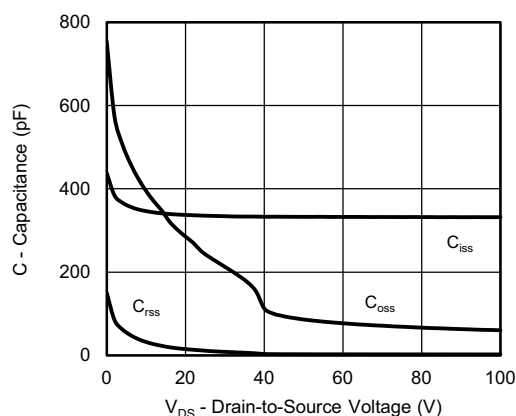
Output Characteristics



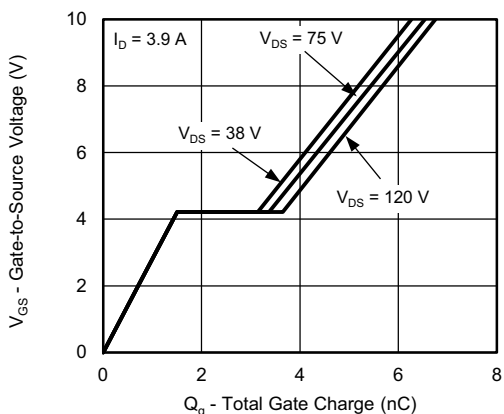
Transfer Characteristics



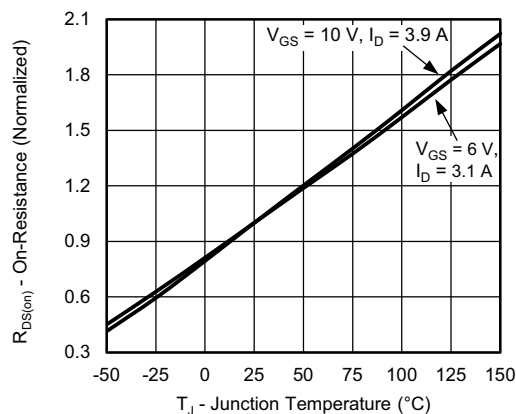
On-Resistance vs. Drain Current and Gate Voltage



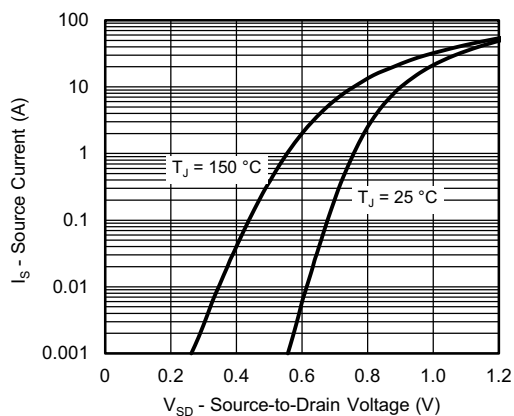
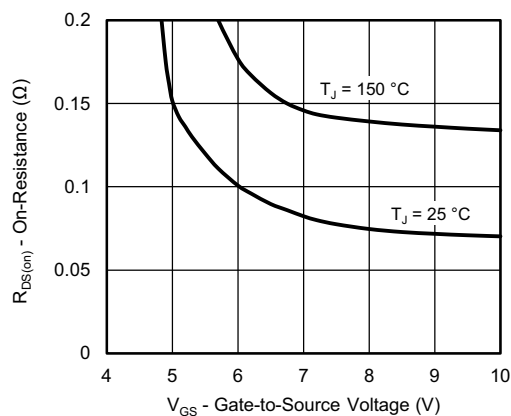
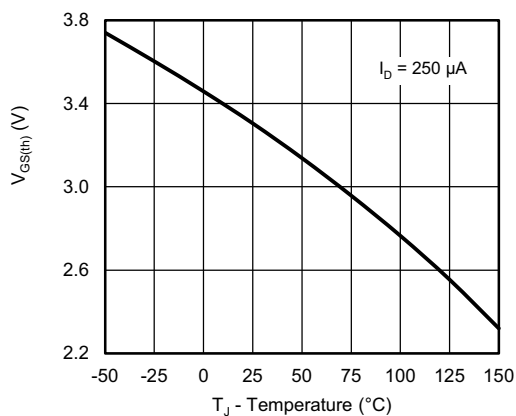
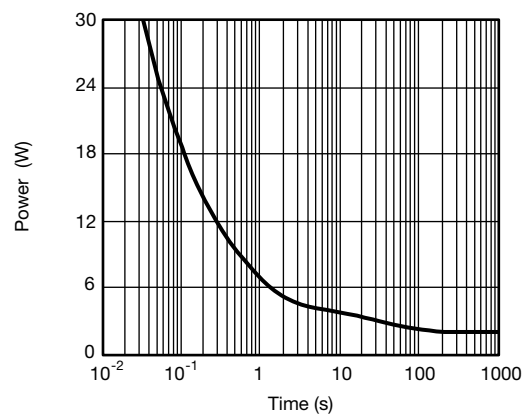
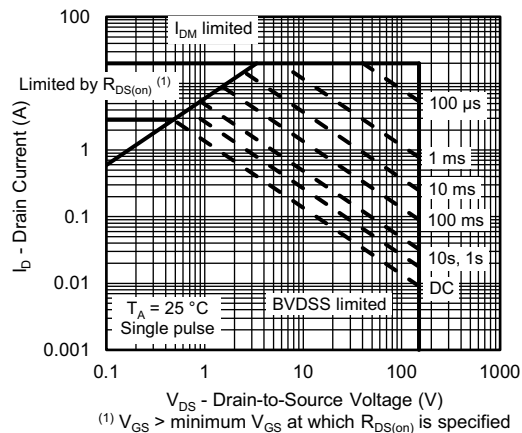
Capacitance

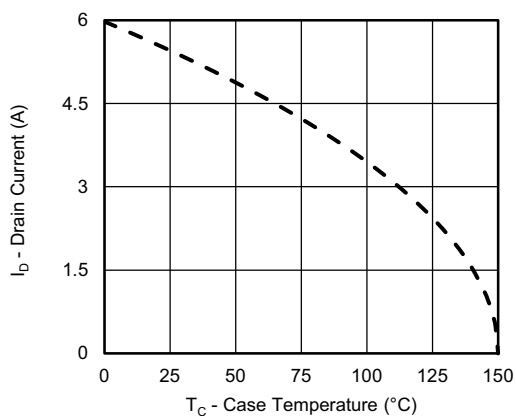
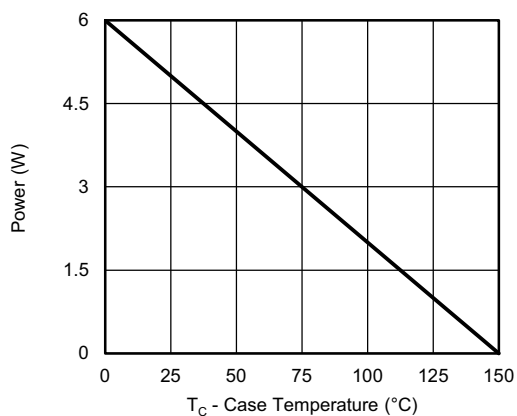
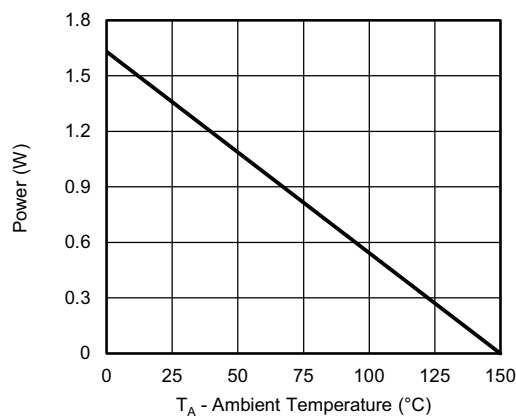


Gate Charge



On-Resistance vs. Junction Temperature

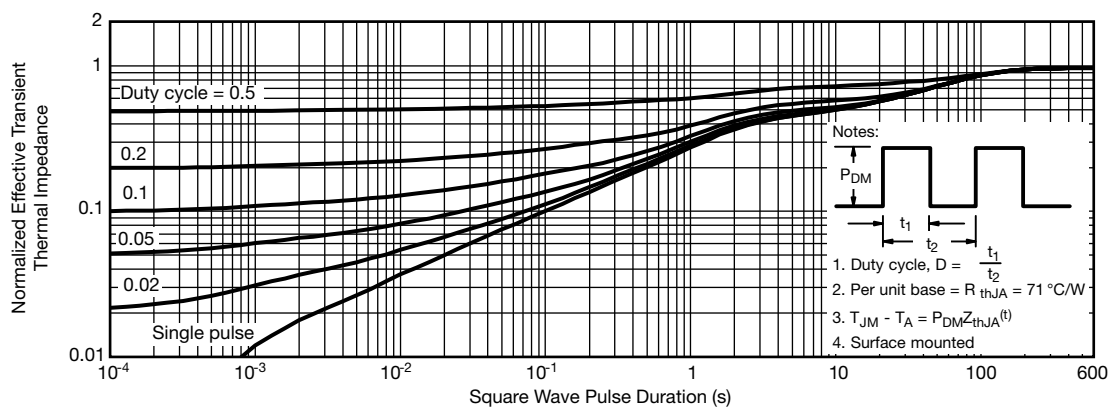
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Single Pulse Power, Junction-to-Ambient

Safe Operating Area, Junction-to-Ambient

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Current Derating ^a

Power, Junction-to-Case

Power, Junction-to-Ambient
Note

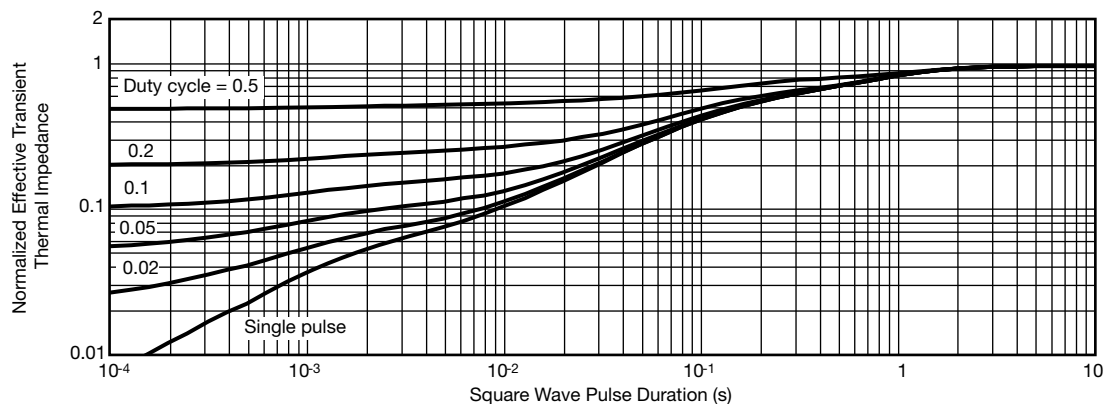
- a. The power dissipation P_D is based on T_J max. = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

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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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