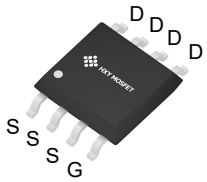
SI4688DY-T1-GE3

N-Channel Enhancement Mode MOSFET

Description

The SI4688DY-T1-GE3 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

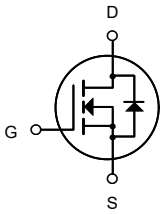


SOP-8

General Features

V_{DS} = 30V I_D = 10A

$R_{DS(ON)}$ < 12mΩ @ V_{GS}=10V



N-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
SI4688DY-T1-GE3	SOP-8	HXY MOSFET	3000

Absolute Maximum Ratings (T_C=25°C nless other wise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current-Continuous	10.0	A
I_{DM}	Pulsed Drain Current	40	A
P_D	Maximum Power Dissipation	2.2	W
E_{AS}	Single pulse avalanche energy	17	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃
$R_{\theta JA}$	Thermal Resistance,Junction-to-Case	57	℃/W

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	1.4	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=10A	---	9	12	mΩ
		V_{GS}=4 5V I_D=5A	---	15	20	mΩ
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	580	---	pF
C_{oss}	Output Capacitance		---	110	---	
C_{rss}	Reverse Transfer Capacitance		---	94	---	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V,I_D=20A, R_G=3Ω,V_{GS}=10V	---	4	---	ns
t_r	Rise Time		---	7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	20	---	ns
t_f	Fall Time		---	6	---	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=15V, I_D=10A	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	4.6	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	3.5	---	nC
I_S	Continuous Drain Current	V_D=V_G=0V	---	---	10	A
I_{SM}	Diode pulsed current	V_D=V_G=0V	---	---	40	A
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=10A	---	---	1.2	V
Qrr	Reverse Recovery Charge	I_S=20A, di/dt=100A/us	---	5.9	---	nC
Trr	Reverse Recovery Time		---	7	---	ns

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25℃, V_{DD}=15V, V_G=10V, L=0.5mH
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

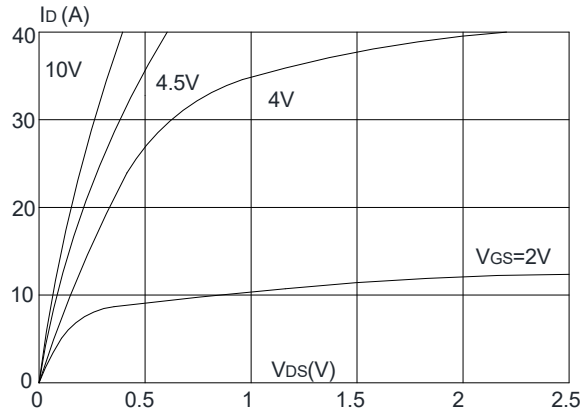


Figure1: Output Characteristics

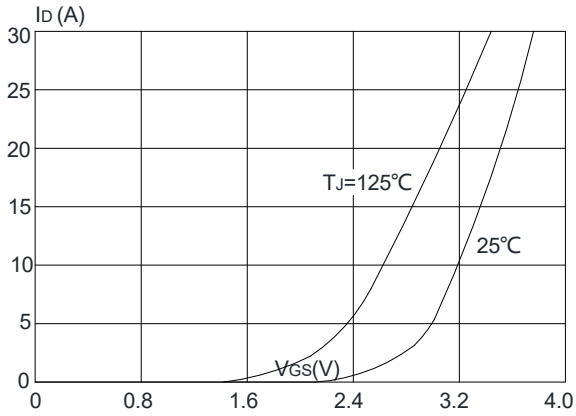


Figure 2: Typical Transfer Characteristics

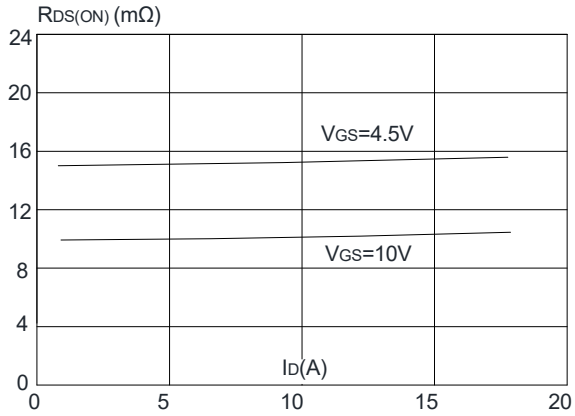


Figure 3: On-resistance vs . Drain Current

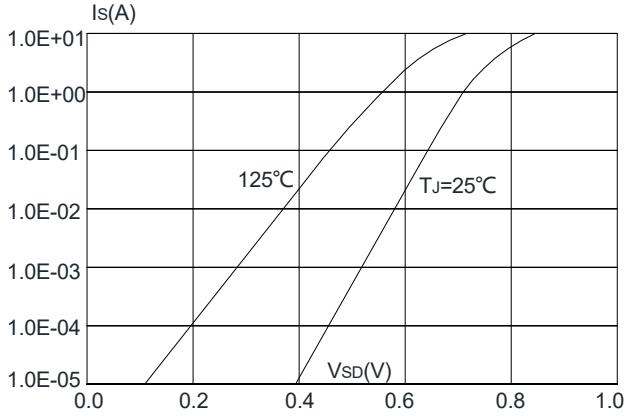


Figure 4: Body Diode Characteristics

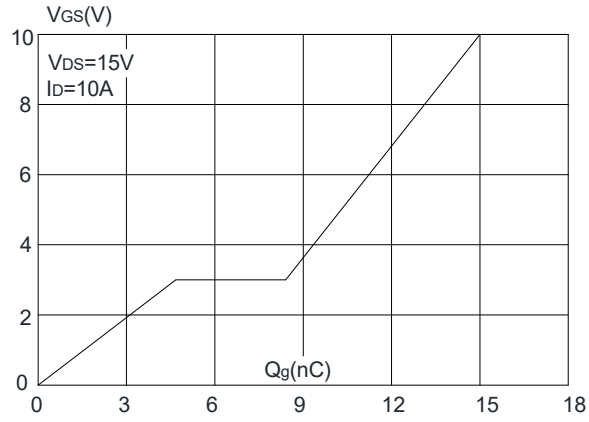


Figure 5: Gate Charge Characteristics

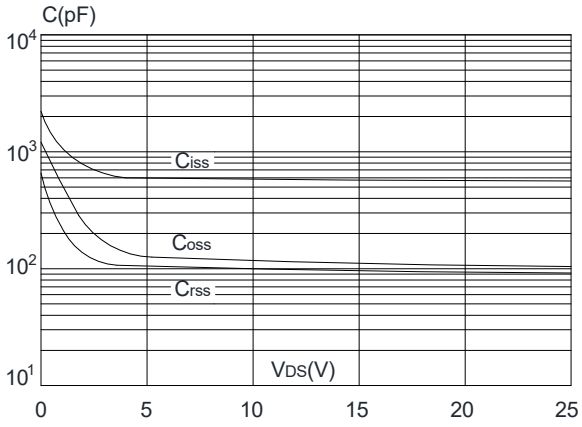


Figure 6: Capacitance Characteristics

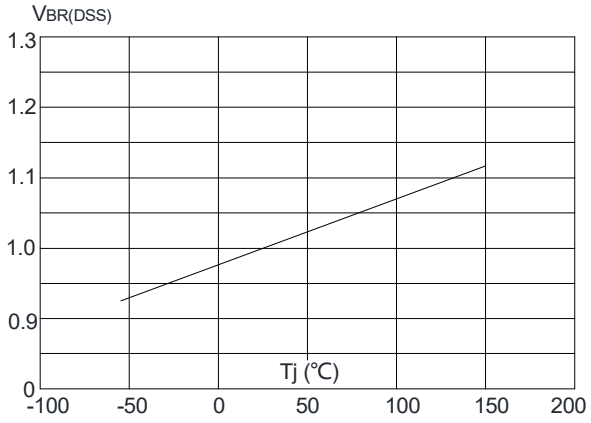


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

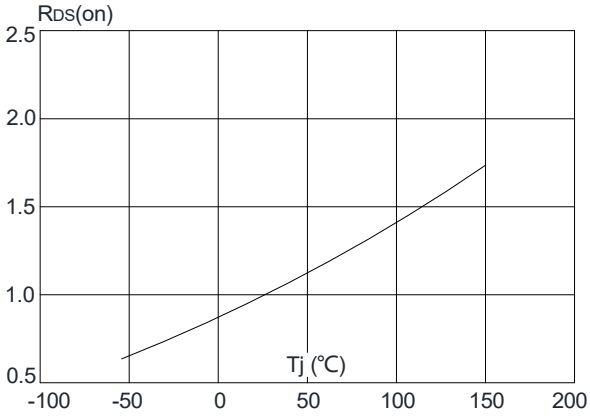


Figure 8: Normalized on Resistance vs. Junction Temperature

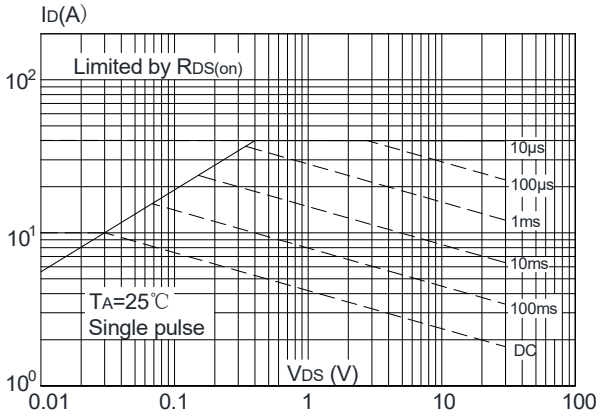


Figure 9: Maximum Safe Operating Area

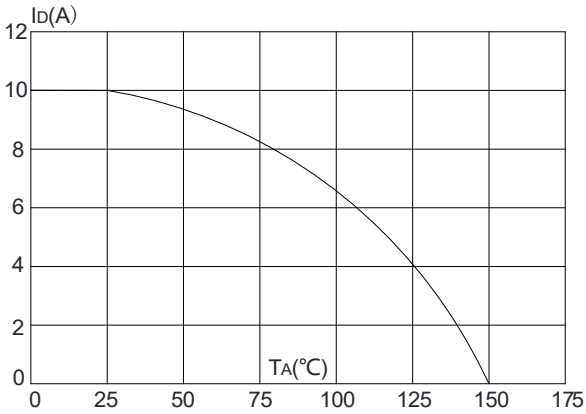


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

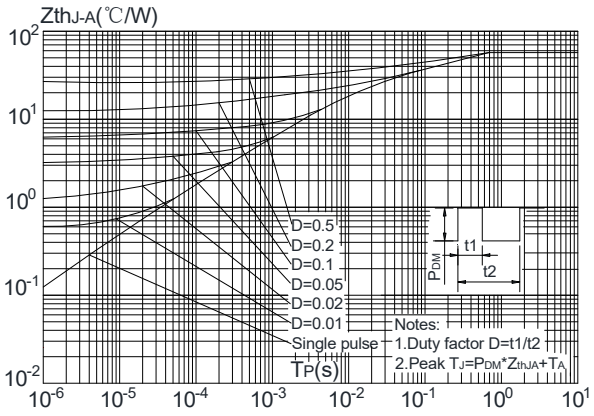
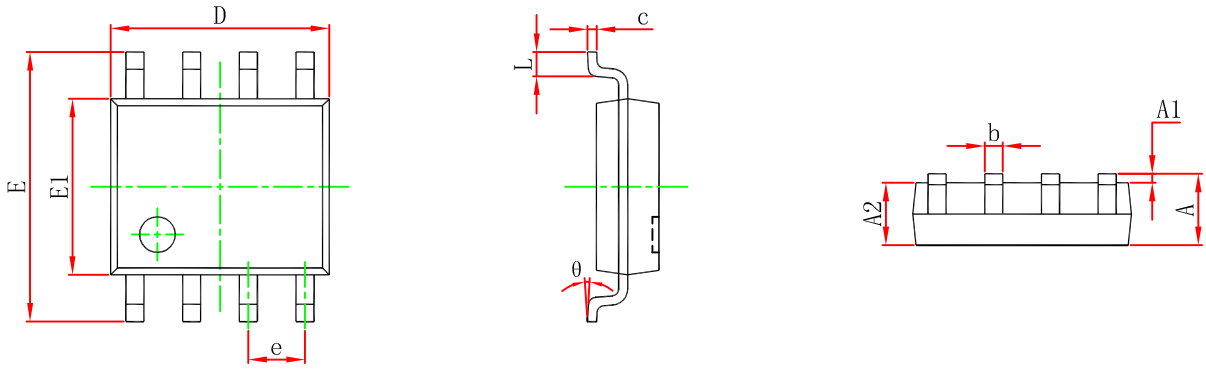
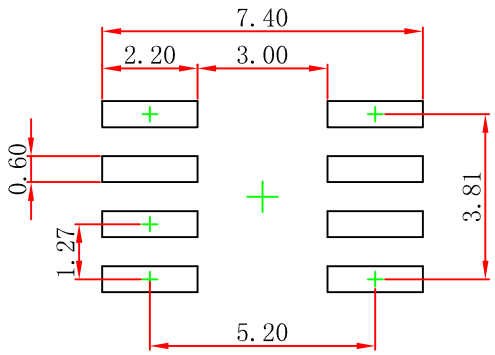


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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