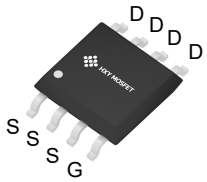
SI4425DDY-T1-GE3

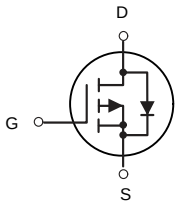
P-Channel Enhancement Mode MOSFET

Description

The SI4425DDY-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



P-Channel MOSFET

General Features

V_{DS} = -30V I_D = -15A

$R_{DS(ON)}$ < 10mΩ@ V_{GS}=-10V

Application

Battery protection

Load switch

Uninterruptible power supply

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
SI4425DDY-T1-GE3	SOP-8	HXY MOSFET	3000

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Drain Current[3], V_{GS} @ 10V	-15	A
I_D@T_A=70℃	Drain Current[3], V_{GS} @ 10V	-10	A
I_{DM}	Pulsed Drain Current[1]	-60	A
P_D@T_A=25℃	Total Power Dissipation	25.6	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
Rthj-c	Maximum Thermal Resistance, Junction-ambient[3]	4.9	℃/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

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	-1.6	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=-10V,I_D=-8A	---	7.5	10	mΩ
		V_{GS}=-4.5V,I_D=-6A	---	11.6	16	
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	3550	---	pF
C_{oss}	Output Capacitance		---	400	---	
C_{rss}	Reverse Transfer Capacitance		---	360	---	
$t_{d(on)}$	Turn-On Delay Time[3,4]	V_{DD}=-15V, V_{GS}=-10V I_D=-20A,R_{GEN}=2.5 Ω	---	14	---	ns
t_r	Rise Time[3,4]		---	19	---	ns
$t_{d(off)}$	Turn-Off Delay Time[3,4]		---	65	---	ns
t_f	Fall Time[3,4]		---	50	---	ns
Q_g	Total Gate Charge[3,4]	V_{DS}=-15V , V_{GS}=-10V , I_D=-20A	---	35	---	nC
Q_{gs}	Gate-Source Charge[3,4]		---	6.2	---	nC
Q_{gd}	Gate-Drain “Miller” Charge[3,4]		---	9.2	---	nC
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-40	A
I_{SM}	Pulsed Source Current		---	---	-160	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=-30A	---	-0.8	-1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition:TJ=25℃,VDD=-15V,VG=-10V,L=0.5mH,RG=25Ω,IAS=-22A
3. PulseTest: Pulse Width≤300μs,Duty Cycle≤2%

Typical Characteristics： (Tc=25°C unless otherwise noted)

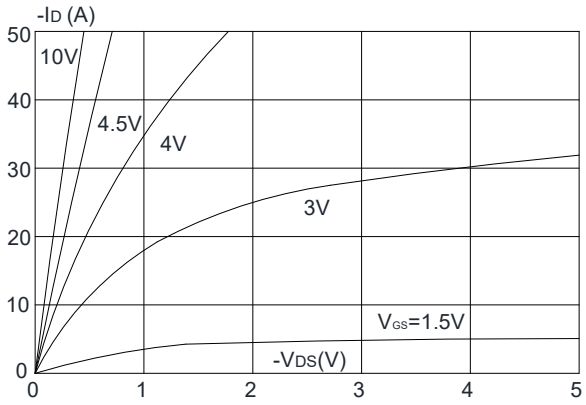


Figure1: Output Characteristics

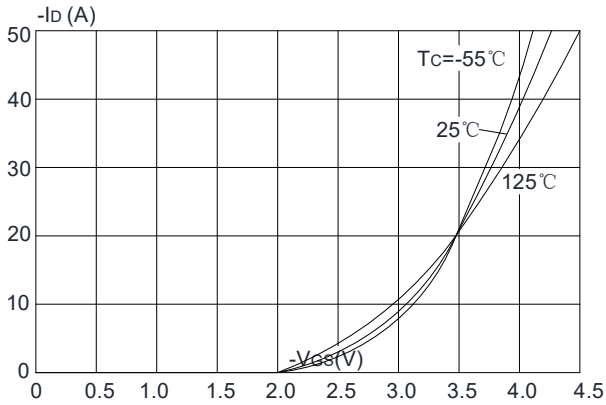


Figure 2: Typical Transfer Characteristics

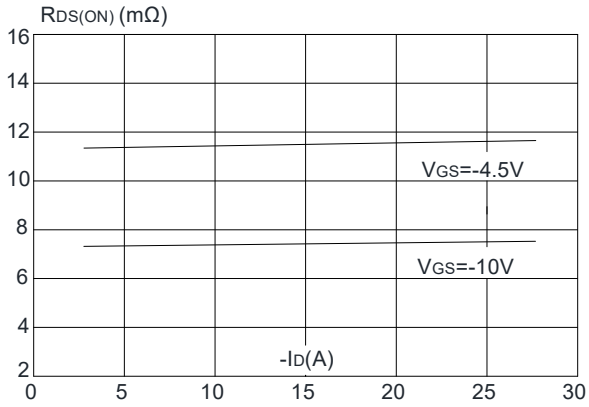


Figure 3: On-resistance vs. Drain Current

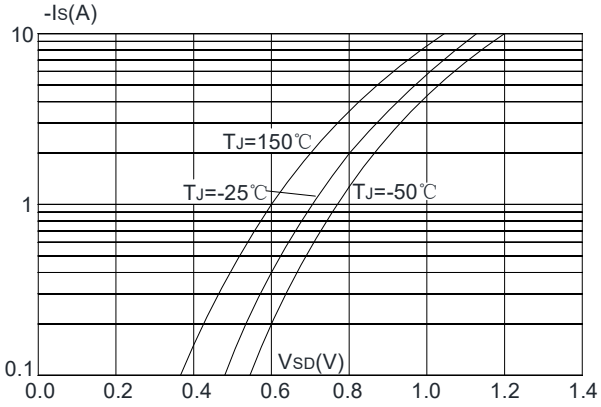


Figure 4: Body Diode Characteristics

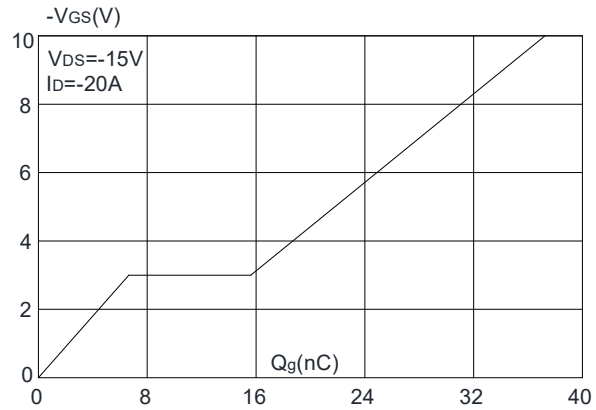


Figure 5: Gate Charge Characteristics

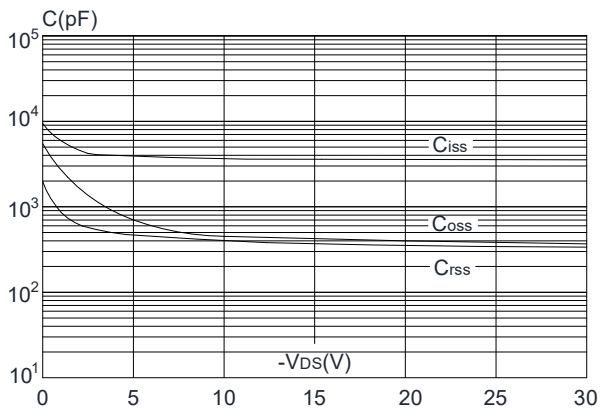


Figure 6: Capacitance Characteristics

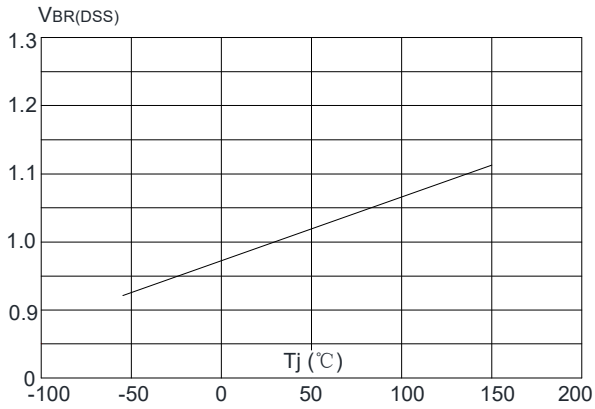


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

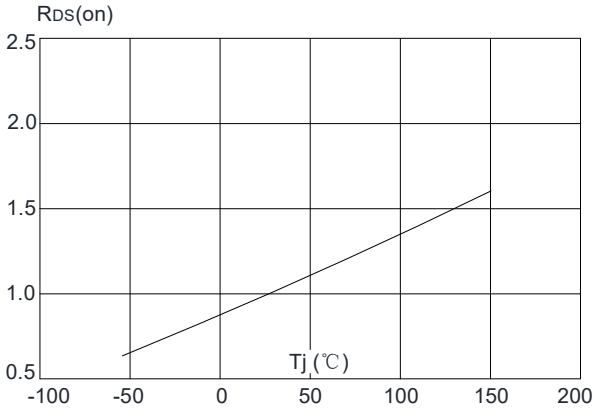


Figure 8: Normalized on Resistance vs. Junction Temperature

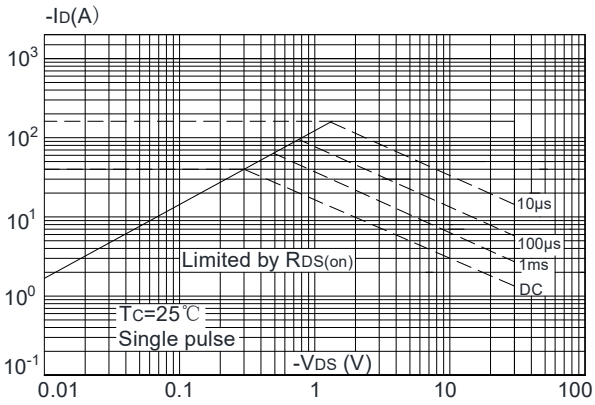


Figure 9: Maximum Safe Operating Area

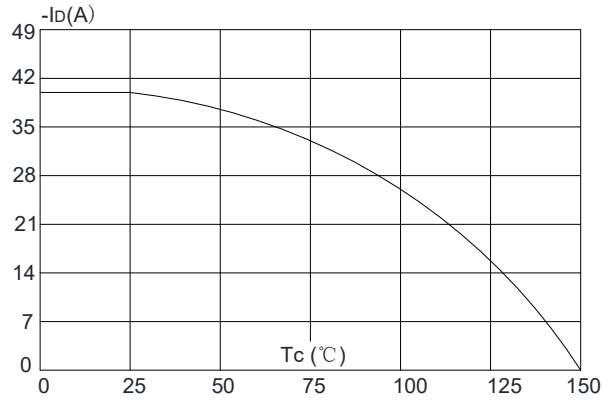


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

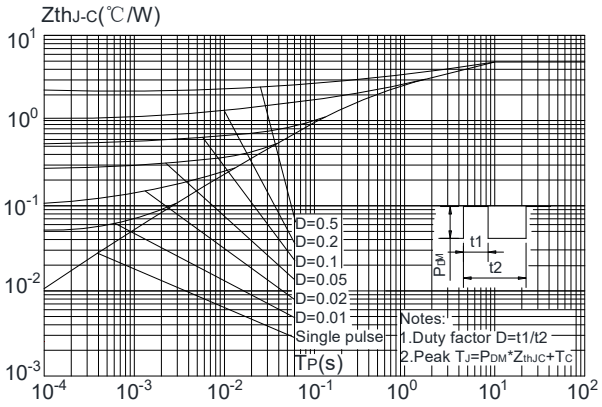
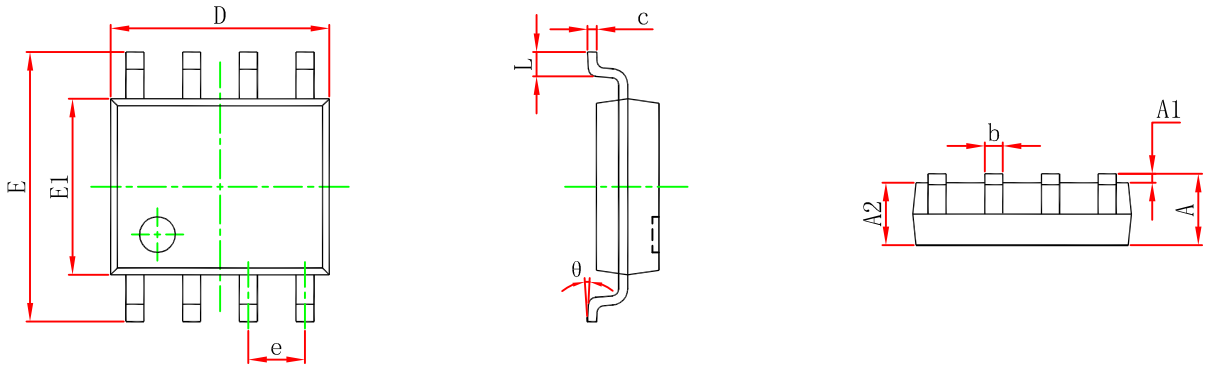
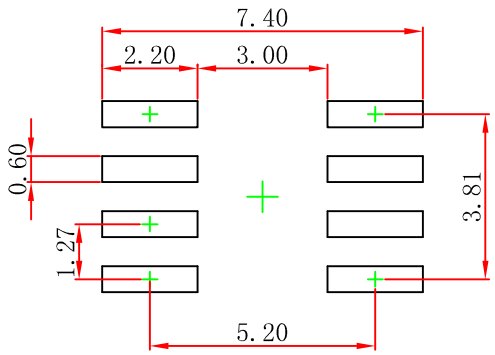


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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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