



## Description

The SISA10BDN-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.

## General Features

$V_{DS} = 30V$   $I_D = 100A$

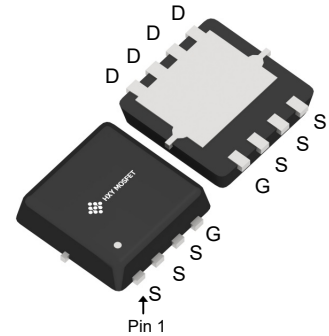
$R_{DS(ON)} < 3m\Omega @ V_{GS}=10V$

## Application

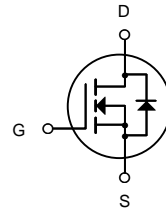
Battery protection

Load switch

Uninterruptible power supply



DFN3X3-8L



N-Channel MOSFET

## Ordering Information

Product ID	Pack	Brand	Qty(PCS)
SISA10BDN-T1-GE3	DFN3X3-8L	HXY MOSFET	5000

## Absolute Maximum Ratings ( $T_c=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
$I_D@T_c=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	100	A
$I_D@T_c=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	60	A
IDM	Pulsed Drain Current <sup>1</sup>	320	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	156	mJ
P <sub>D</sub>	Total Power Dissipation	31.7	W
TSTG	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C
R <sub>θJC</sub>	Thermal Resistance Junction-Case	3.94	°C/W



**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=30V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.6	2.5	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>3</sup>	$V_{GS}=10V, I_D=30A$	---	2.5	3	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	4.3	5.5	
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	---	3499	---	pF
$C_{oss}$	Output Capacitance		---	499	--	
$C_{riss}$	Reverse Transfer Capacitance		---	430	---	
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, I_D=30A,$ $R_G=3\Omega, V_{GS}=10V$	---	12	---	ns
$t_r$	Rise Time		---	119	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	59	---	ns
$t_f$	Fall Time		---	109	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V,$ $I_D=30A$	---	69	---	nC
$Q_{gs}$	Gate-Source Charge		---	10	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	17	---	nC
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=30A$	---	---	1.2	V
$I_S$	Continuous Drain Current	$V_D=V_G=0V$	---	---	100	A
$I_{SM}$	Pulsed Drain Current		---	---	320	A
$T_{rr}$	Reverse Recovery Time	$I_F=20A, T_J=25^{\circ}\text{C}$	---	21	---	NS
$Q_{rr}$	Reverse Recovery Charge	$di/dt=100A/\mu s$	---	9	---	NC

**Notes:**

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition:  $T_J=25^{\circ}\text{C}$ ,  $V_{DD}=15V$ ,  $V_G=10V$ ,  $R_G=25\Omega$ ,  $L=0.5mH$ ,  $I_{AS}=25A$
3. Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$



### Typical Performance Characteristics

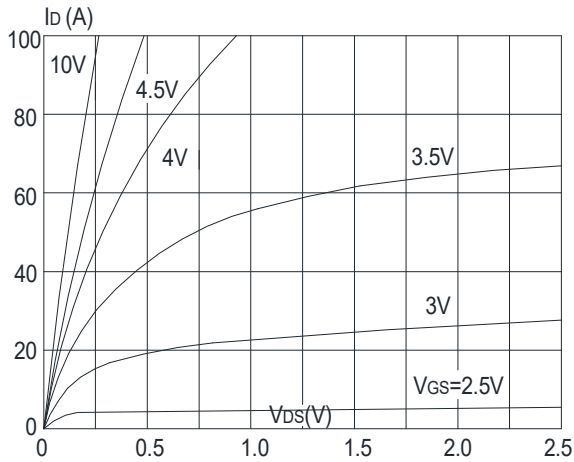


Figure 1: Output Characteristics

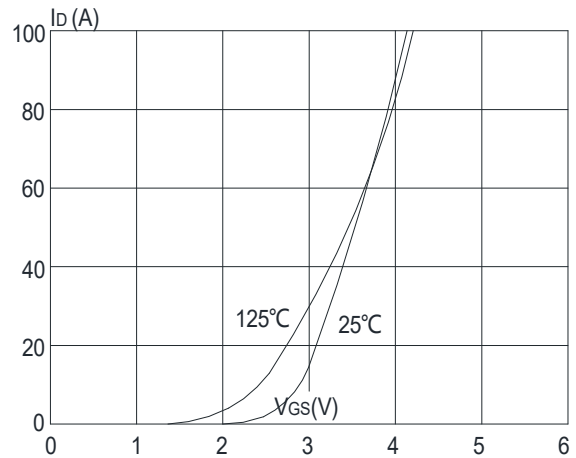


Figure 2: Typical Transfer Characteristics

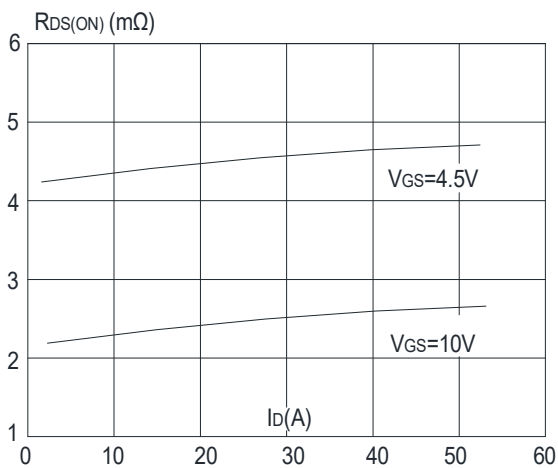


Figure 3: On-resistance vs. Drain Current

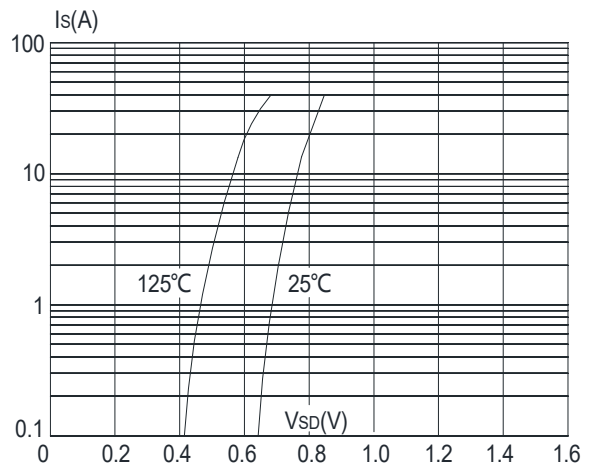


Figure 4: Body Diode Characteristics

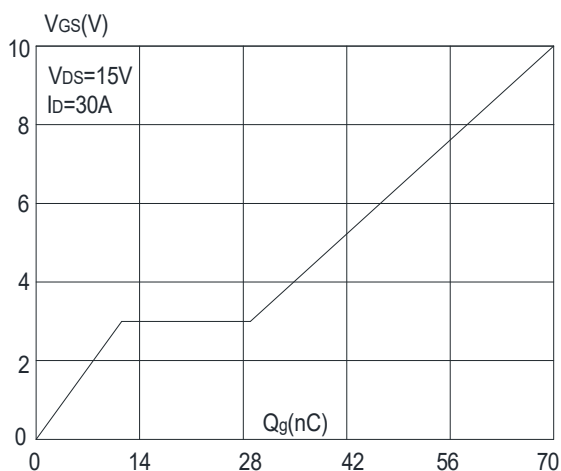


Figure 5: Gate Charge Characteristics

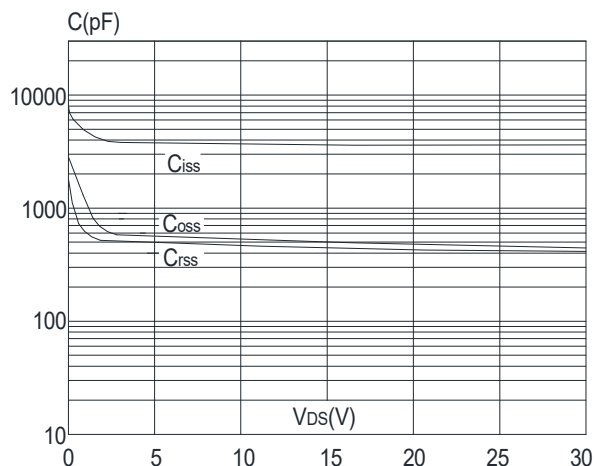
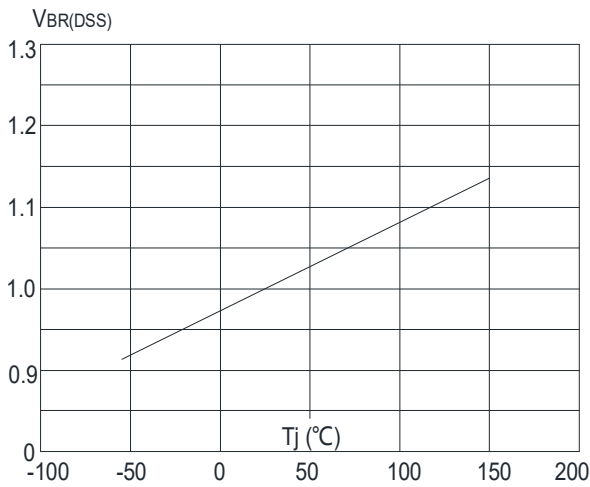
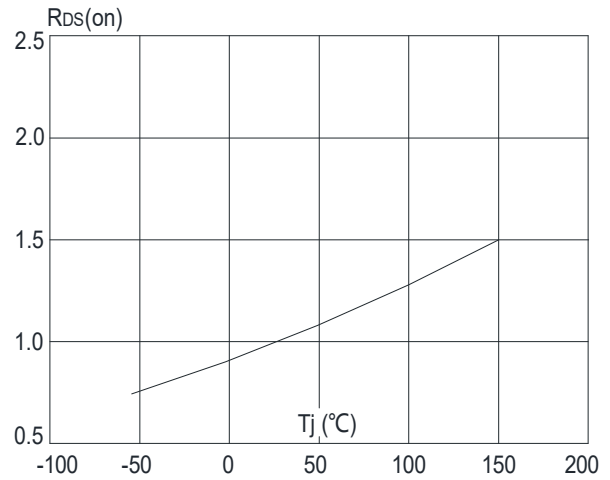


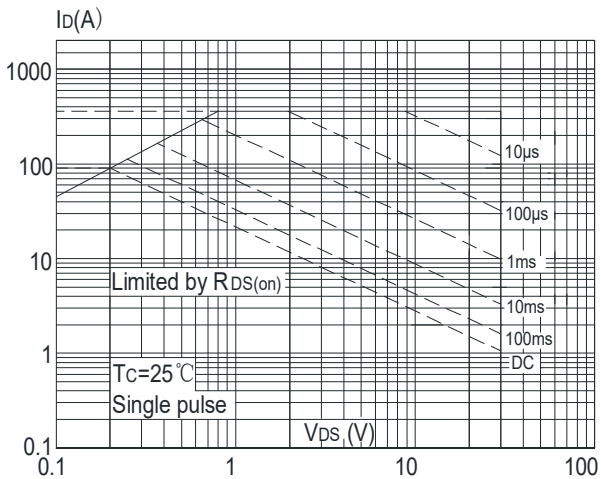
Figure 6: Capacitance Characteristics



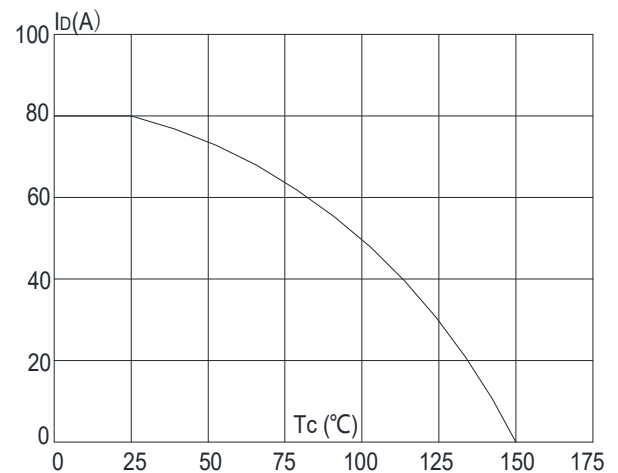
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



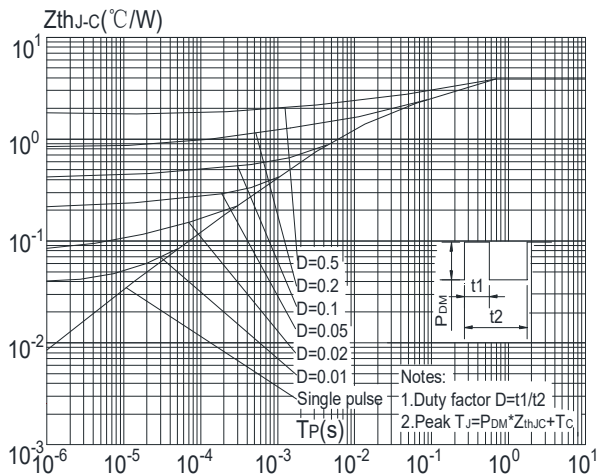
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**Figure 9:** Maximum Safe Operating Area



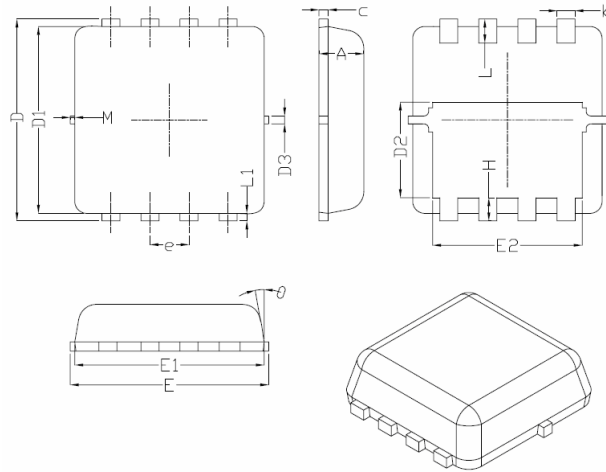
**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature



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



### DFN3X3-8L Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°



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