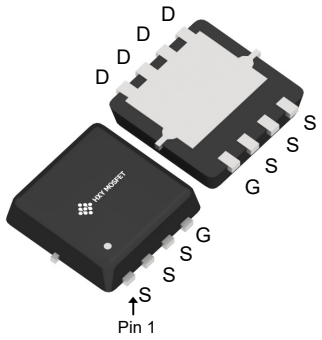
# SISA10BDN-T1-GE3

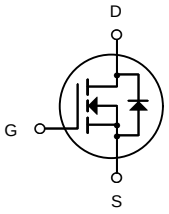
N-Channel Enhancement Mode MOSFET

## 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.




DFN3X3-8L




N-Channel MOSFET

## General Features

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

$R_{DS(ON)}$ < 3mΩ @ $V_{GS}$=10V

## Application

Battery protection

Load switch

Uninterruptible power supply

## Package Marking and Ordering Information

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

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

| Symbol | Parameter | Rating | Units |
|---|---|---|---|
| VDS | Drain-Source Voltage | 30 | V |
| VGS | Gate-Source Voltage | ±20 | V |
| $I_D$@$T_C$=25℃ | Continuous Drain Current, $V_{GS}$ @ 10V | 100 | A |
| $I_D$@$T_C$=100℃ | Continuous Drain Current, $V_{GS}$ @ 10V | 60 | A |
| IDM | Pulsed Drain Current[1] | 320 | A |
| EAS | Single Pulse Avalanche Energy[2] | 156 | mJ |
| $P_D$ | Total Power Dissipation | 31.7 | W |
| TSTG | Storage Temperature Range | -55 to 150 | ℃ |
| $T_J$ | Operating Junction Temperature Range | -55 to 150 | ℃ |
| $R_{\theta}JC$ | Thermal Resistance Junction-Case | 3.94 | ℃/W |

## Electrical Characteristics ($T_J$=25°Cunless 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[3] | $V_{GS}$=10V,$I_D$=30A | --- | 2.5 | 3 | mΩ |
| | | $V_{GS}$=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 | -- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 430 | --- | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DS}$=15V, $I_D$=30A, $R_G$=3Ω,$V_{GS}$=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 Curren | VD=VG=0V | --- | --- | 100 | A |
| $I_{SM}$ | Pulsed Drain Current | | --- | --- | 320 | A |
| Trr | Reverse Recovery Time | $I_F$=20A,$T_J$=25°C dI/dt=100A/us | --- | 21 | --- | NS |
| Qrr | Reverse Recovery Charge | | --- | 9 | --- | NC |

**Notes:**

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

## Typical Performance Characteristics

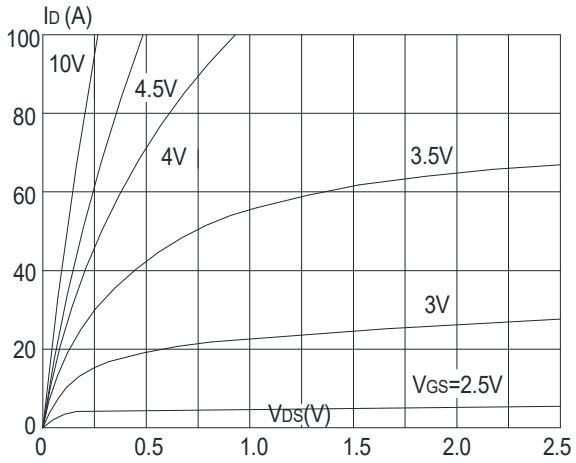



**Figure1:** Output Characteristics

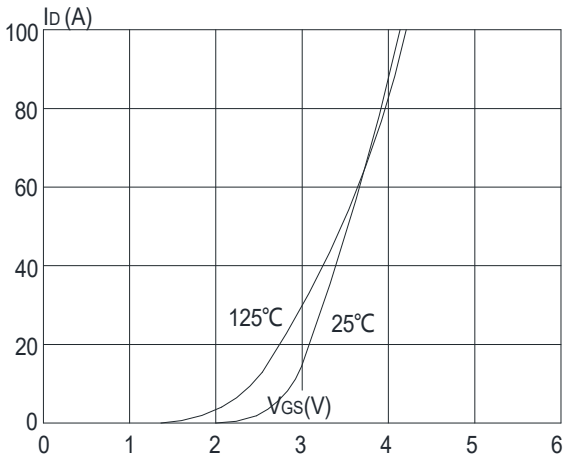



**Figure 2:** Typical Transfer Characteristics

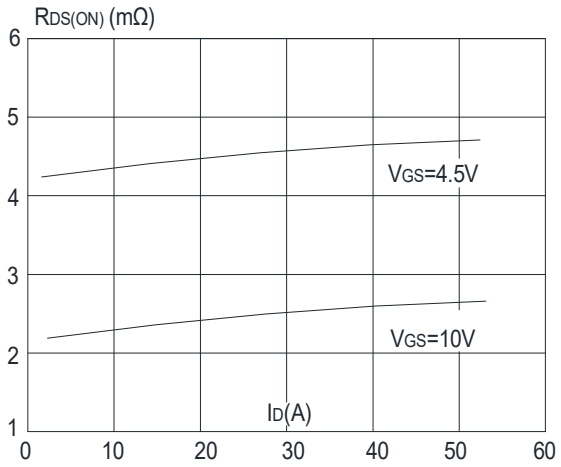



**Figure 3:**On-resistance vs. Drain Current

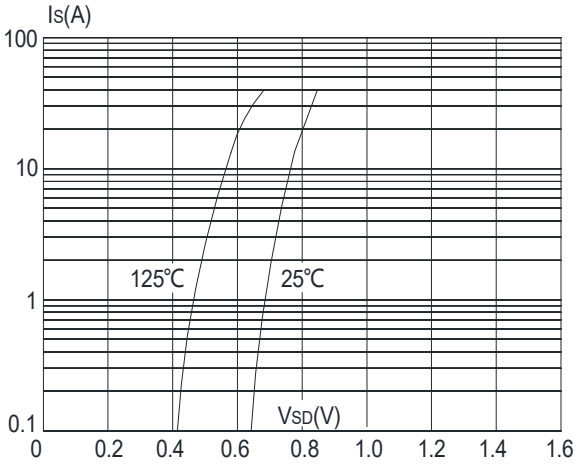



**Figure 4**: Body Diode Characteristics

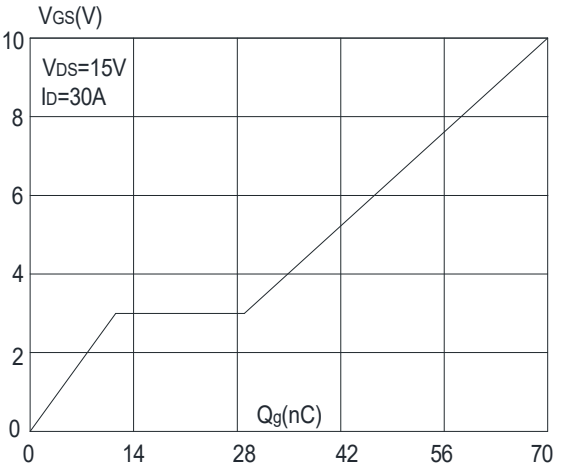



**Figure 5:** Gate Charge Characteristics

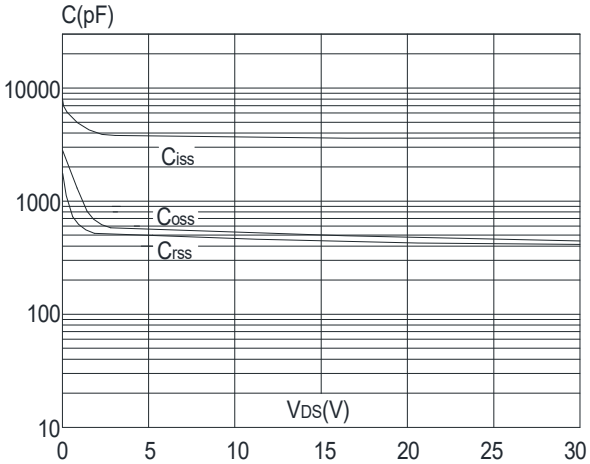



**Figure 6:** Capacitance Characteristics

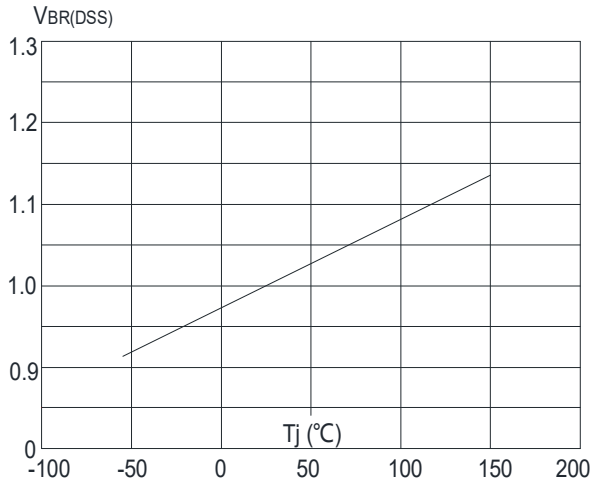



**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

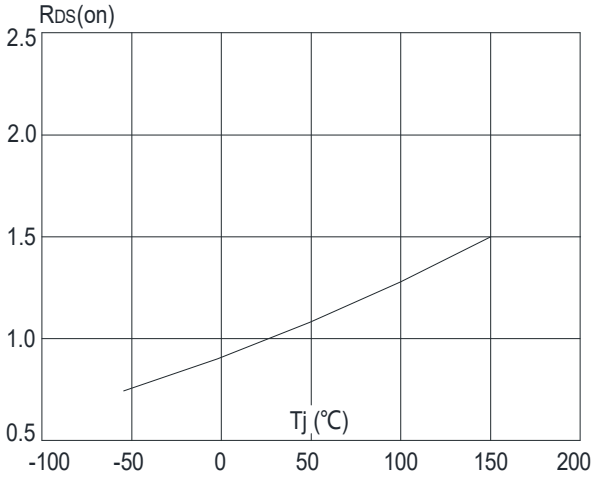



**Figure 8:** Normalized on Resistance vs. Junction Temperature

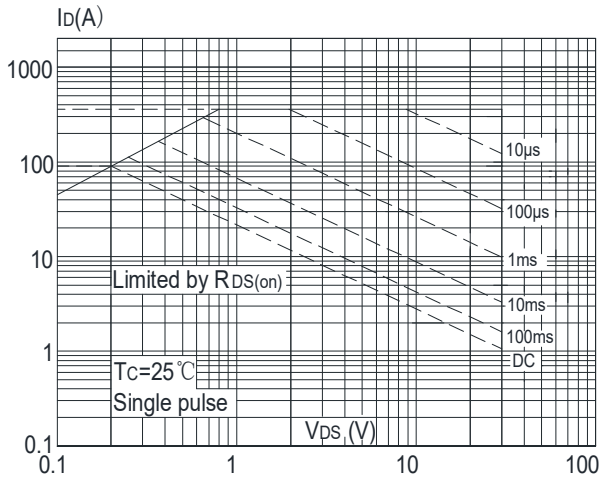



**Figure 9:** Maximum Safe Operating Area

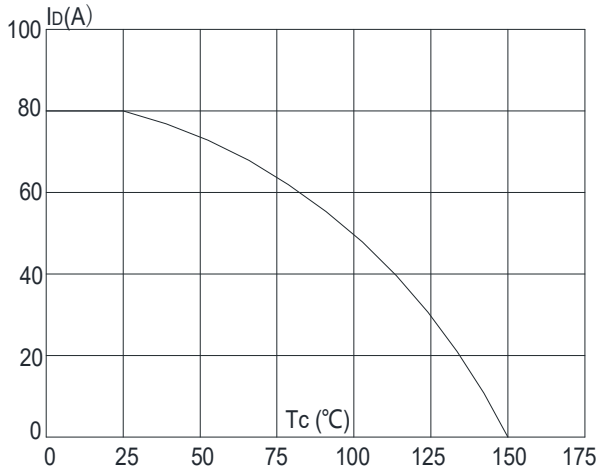



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

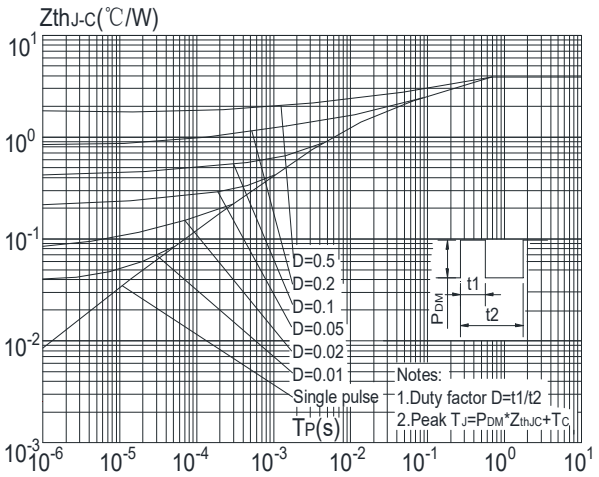
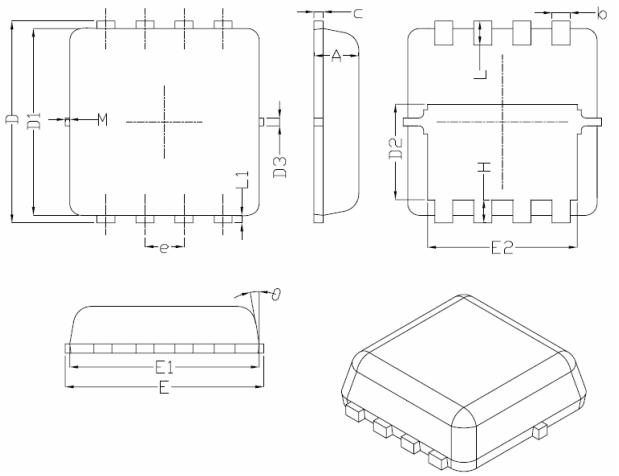



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

## 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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## HXY MOSFET:

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