



Description

The HSI1022RT1GE3 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 60V$ $I_D = 0.115A$

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

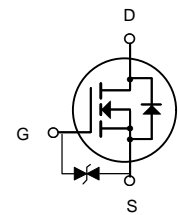
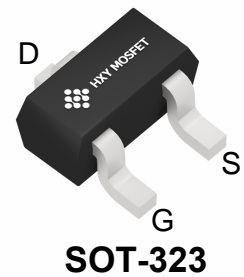
ESD Rating: HBM $\geq 2000V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

| Product ID | Pack | Marking | Qty(PCS) |
|---------------|---------|---------|----------|
| HSI1022RT1GE3 | SOT-323 | 72K | 3000 |

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

| Symbol | Parameter | Limit | Unit |
|-----------------|---|------------|--------------|
| V_{DS} | Drain-Source Voltage | 60 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Drain Current-Continuous | 0.115 | A |
| P_D | Maximum Power Dissipation | 0.2 | W |
| T_J, T_{STG} | Operating Junction and Storage Temperature Range | -55 To 150 | $^\circ C$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient ^(Note 2) | 625 | $^\circ C/W$ |



Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---------------------------------|---------------|---|------|-----|----------|----------|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0\text{ V}$, $I_D=250\text{ }\mu\text{A}$ | 60 | | | V |
| Gate-Threshold Voltage | $V_{(GS)th}$ | $V_{DS}=V_{GS}$, $I_D=250\text{ }\mu\text{A}$ | 1 | 1.6 | 2.5 | |
| Gate-body Leakage | I_{GSS} | $V_{DS}=0\text{ V}$, $V_{GS}=\pm 20\text{ V}$ | | | ± 80 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=60\text{ V}$, $V_{GS}=0\text{ V}$ | | | 80 | nA |
| On-state Drain Current | $I_{D(on)}$ | $V_{GS}=10\text{ V}$, $V_{DS}=7\text{ V}$ | 500 | | | mA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10\text{ V}$, $I_D=115\text{ mA}$ | | 1.3 | 3 | Ω |
| | | $V_{GS}=4.5\text{ V}$, $I_D=50\text{ mA}$ | | 2 | 5 | |
| Forward Trans conductance | g_{fs} | $V_{DS}=10\text{ V}$, $I_D=200\text{ mA}$ | 80 | | | ms |
| Drain-source on-voltage | $V_{DS(on)}$ | $V_{GS}=10\text{ V}$, $I_D=500\text{ mA}$ | | | 3.75 | V |
| | | $V_{GS}=5\text{ V}$, $I_D=50\text{ mA}$ | | | 0.375 | V |
| Diode Forward Voltage | V_{SD} | $I_S=115\text{ mA}$, $V_{GS}=0\text{ V}$ | 0.55 | | 1.2 | V |
| Input Capacitance * | C_{iss} | $V_{DS}=25\text{ V}$, $V_{GS}=0\text{ V}$, $f=1\text{ MHz}$ | | | 50 | pF |
| Output Capacitance * | C_{oss} | | | | 25 | |
| Reverse Transfer Capacitance * | C_{rss} | | | | 5 | |

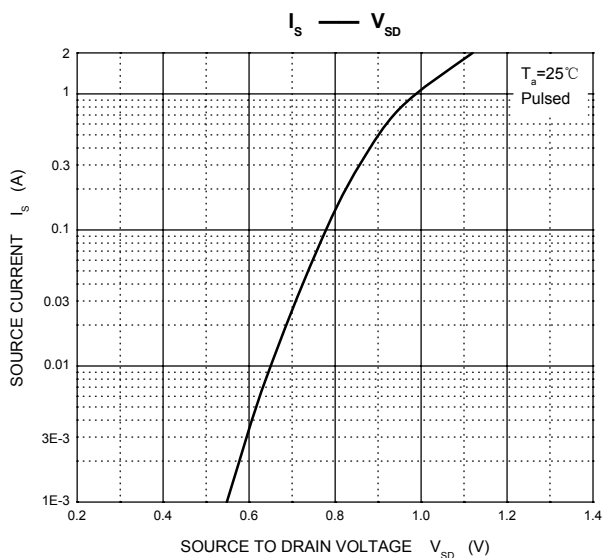
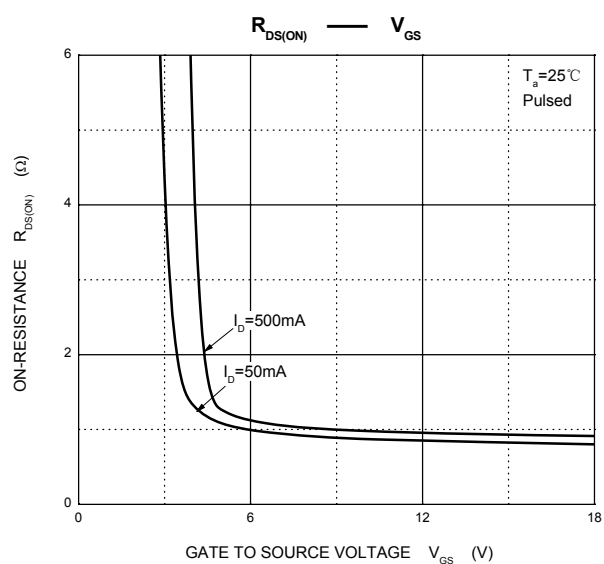
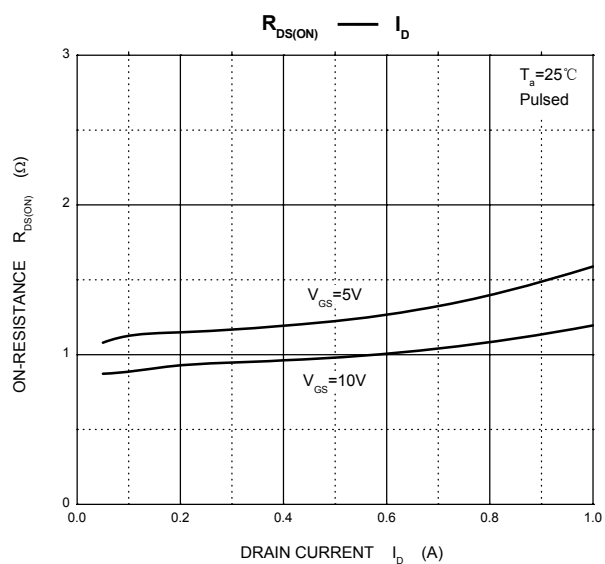
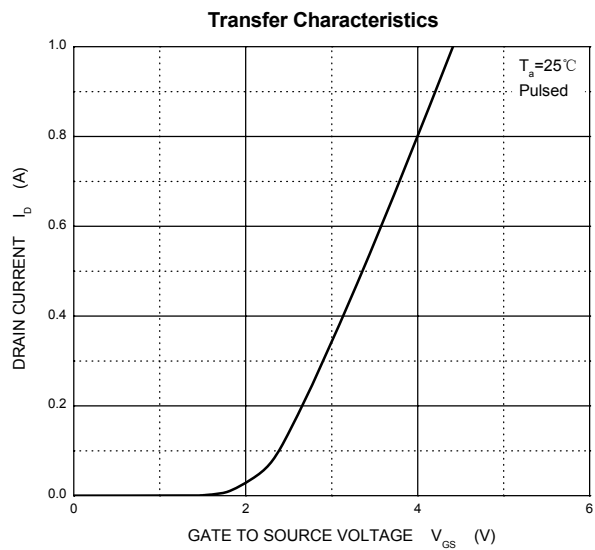
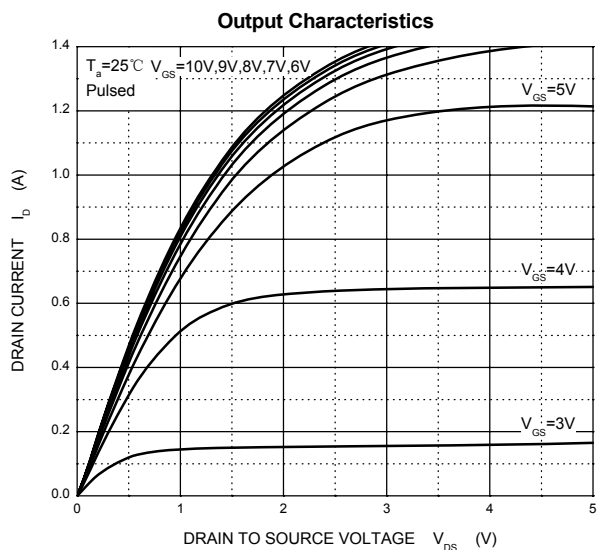
Switching Time

| | | | | | | |
|----------------|--------------|--|--|--|----|----|
| Turn-on Time * | $t_{d(on)}$ | $V_{DD}=25\text{ V}$, $R_L=50\Omega$, $I_D=500\text{ mA}$, $V_{GEN}=10\text{ V}$ $R_G=25\Omega$ | | | 20 | ns |
| Turn-off Time* | $t_{d(off)}$ | | | | 40 | |

*These parameters have no way to verify.

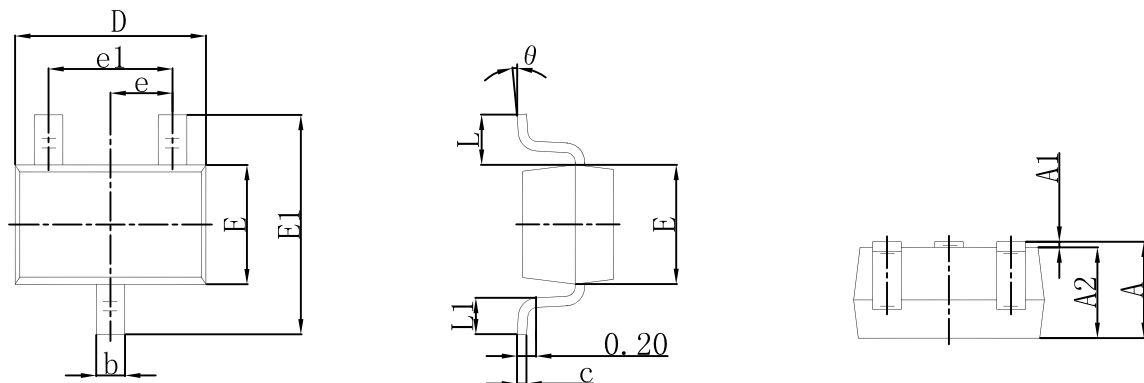


Typical Characteristics





SOT-323 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.200 | 0.400 | 0.008 | 0.016 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.450 | 0.085 | 0.096 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| K | 0° | 8° | 0° | 8° |



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