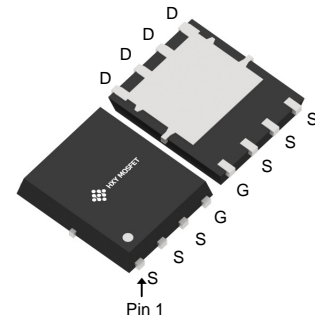




Description

The STL60N3LLH5 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.



DFN5X6-8L

General Features

$V_{DS} = 30V$ $I_D = 50A$

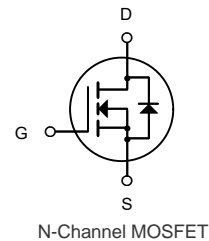
$R_{DS(ON)} < 8.5m\Omega$ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|-------------|-----------|------------|----------|
| STL60N3LLH5 | DFN5X6-8L | HXY MOSFET | 5000 |

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

| Symbol | Parameter | Rating | Units |
|-----------------------|---|------------|-------|
| V_{DS} | Drain-Source Voltage | 30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D@T_C=25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 60 | A |
| $I_D@T_C=100^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 38 | A |
| I_{DM} | Pulsed Drain Current ¹ | 200 | A |
| EAS | Single Pulse Avalanche Energy ² | 36 | mJ |
| I_{AS} | Avalanche Current | 50 | A |
| $P_D@T_C=25^\circ C$ | Total Power Dissipation ⁴ | 31 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | °C |
| T_J | Operating Junction Temperature Range | -55 to 150 | °C |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient | 62 | °C/W |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case ³ | 27 | °C/W |



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

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---------------------|---|--|-----|------|------|-------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | 30 | --- | --- | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{GS} =0V, V _{DS} =24V | --- | --- | 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 | 1.2 | 1.5 | 2.5 | V |
| R _{DS(ON)} | Drain-Source On Resistance ⁴ | V _{GS} =10V, I _D =30A | --- | 6.5 | 8.5 | mΩ |
| | | V _{GS} =4.5V, I _D =15A | --- | 11 | 14 | |
| G _{FS} | Forward Transconductance | V _{DS} =5V, I _D =30A | --- | 38 | --- | S |
| C _{iss} | Input Capacitance | V _{DS} =15V, V _{GS} =0V, f=1MHz | --- | 1317 | 1844 | pF |
| C _{oss} | Output Capacitance | | --- | 163 | 228 | |
| C _{rss} | Reverse Transfer Capacitance | | --- | 131 | 183 | |
| t _{d(on)} | Turn-On Delay Time | V _{DD} =15V, I _D =15A, V _{GS} =15V, R _G =3.3Ω | --- | 4.6 | 9.2 | ns |
| t _r | Rise Time | | --- | 12.2 | 22 | ns |
| t _{d(off)} | Turn-Off Delay Time | | --- | 26.6 | 53 | ns |
| t _f | Fall Time | | --- | 8 | 16 | ns |
| Q _g | Total Gate Charge | V _{GS} =4.5V, V _{DS} =15V, I _D =15A | --- | 17.6 | 21 | nC |
| Q _{gs} | Gate-Source Charge | | --- | 2.35 | 5.9 | nC |
| Q _{gd} | Gate-Drain "Miller" Charge | | --- | 5.9 | 7.1 | nC |
| V _{SD} | Source-Drain Diode Forward Voltage | V _{GS} =0V, I _S =1A | --- | --- | 1 | V |
| I _S | Continuous Source Current | V _G =V _D =0V, Force Current | --- | --- | 58 | A |
| I _{SM} | Pulsed Source Current | | --- | --- | 115 | A |
| t _{rr} | Reverse Recovery Time | I _F =30A, dI/dt=100A/μs, T _J =25°C | --- | 9.2 | --- | ns |
| Q _{rr} | Reverse Recovery Charge | | --- | 2 | --- | nC |

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=14A
3. R_{θJA} is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.



Typical Characteristics

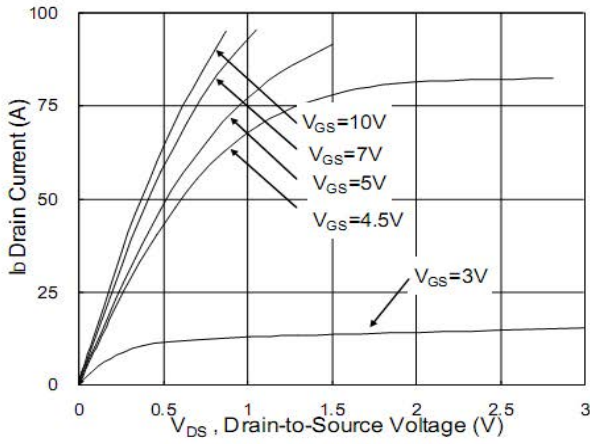


Fig.1 Typical Output Characteristics

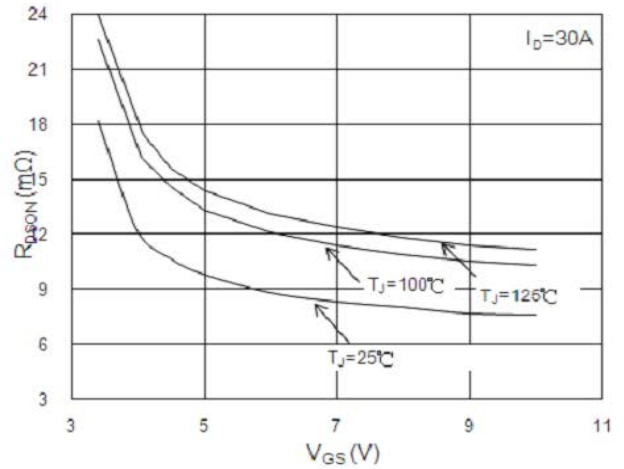


Fig.2 On-Resistance vs. Gate-Source

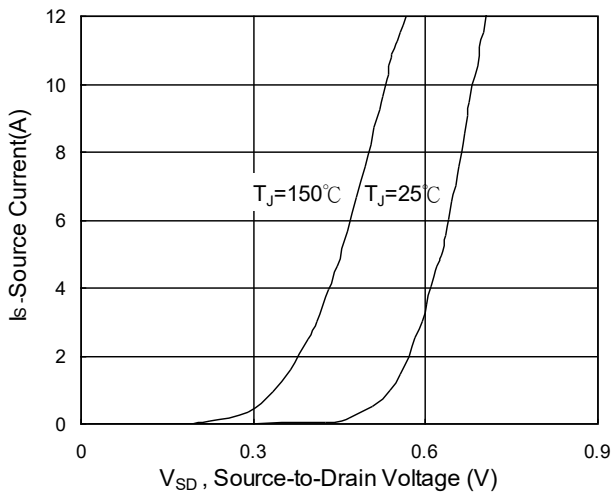


Fig.3 Forward Characteristics of reverse

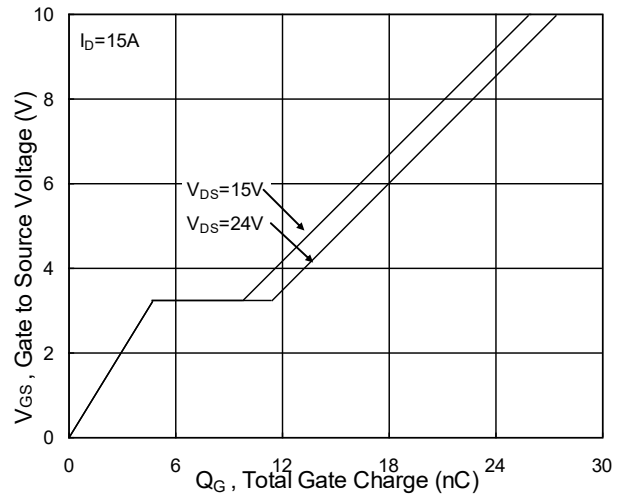


Fig.4 Gate-Charge Characteristics

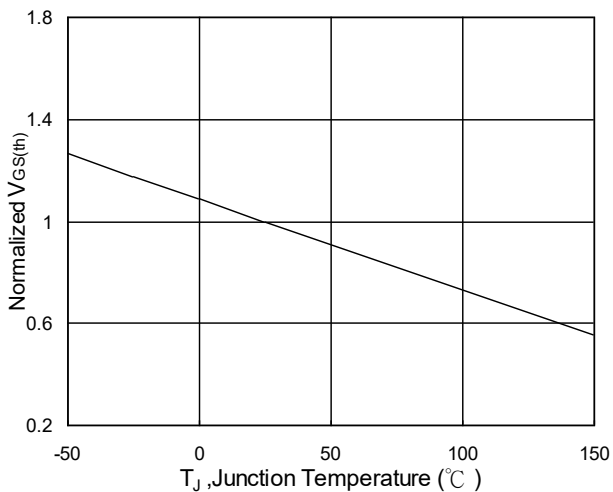


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

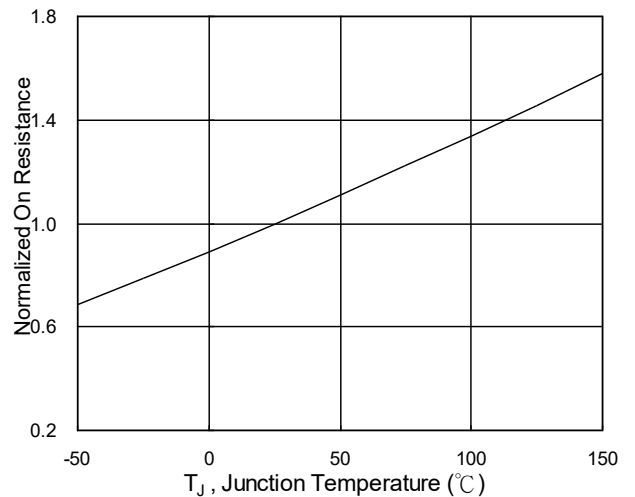


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

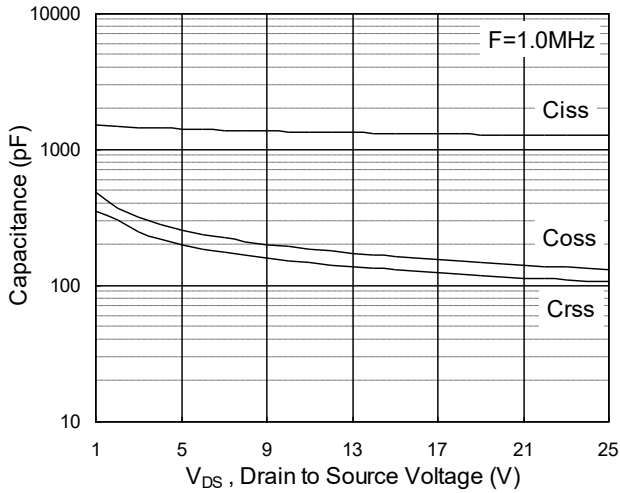


Fig.7 Capacitance

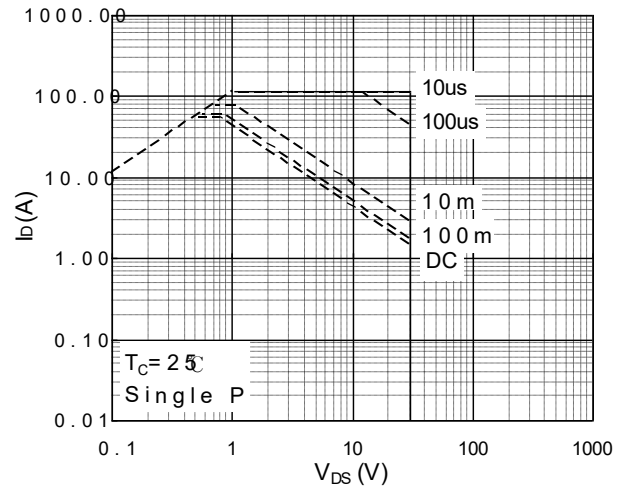


Fig.8 Safe Operating Area

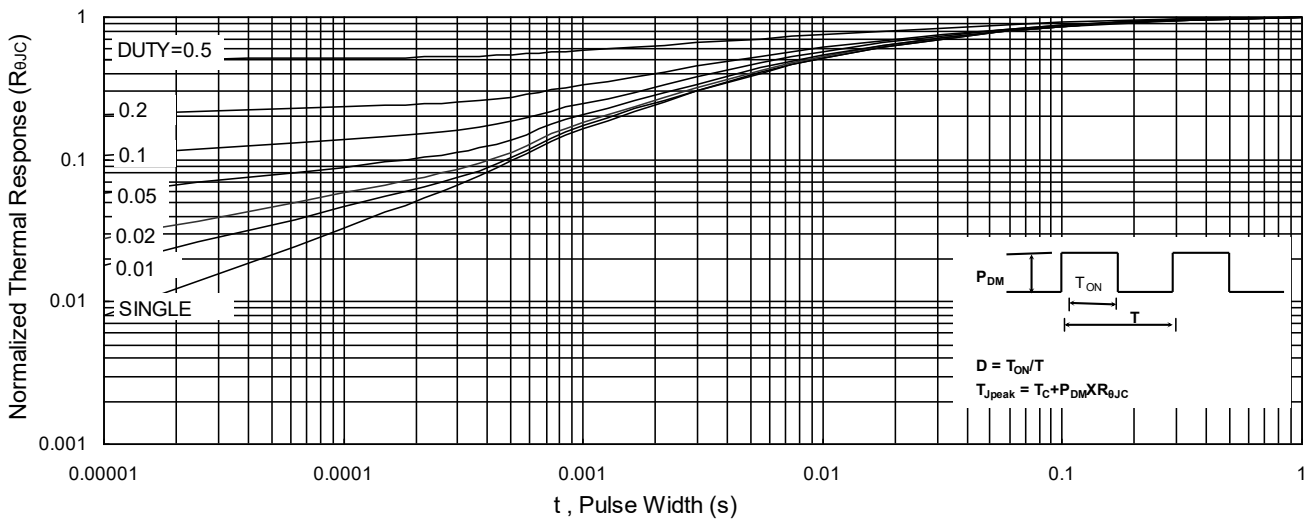


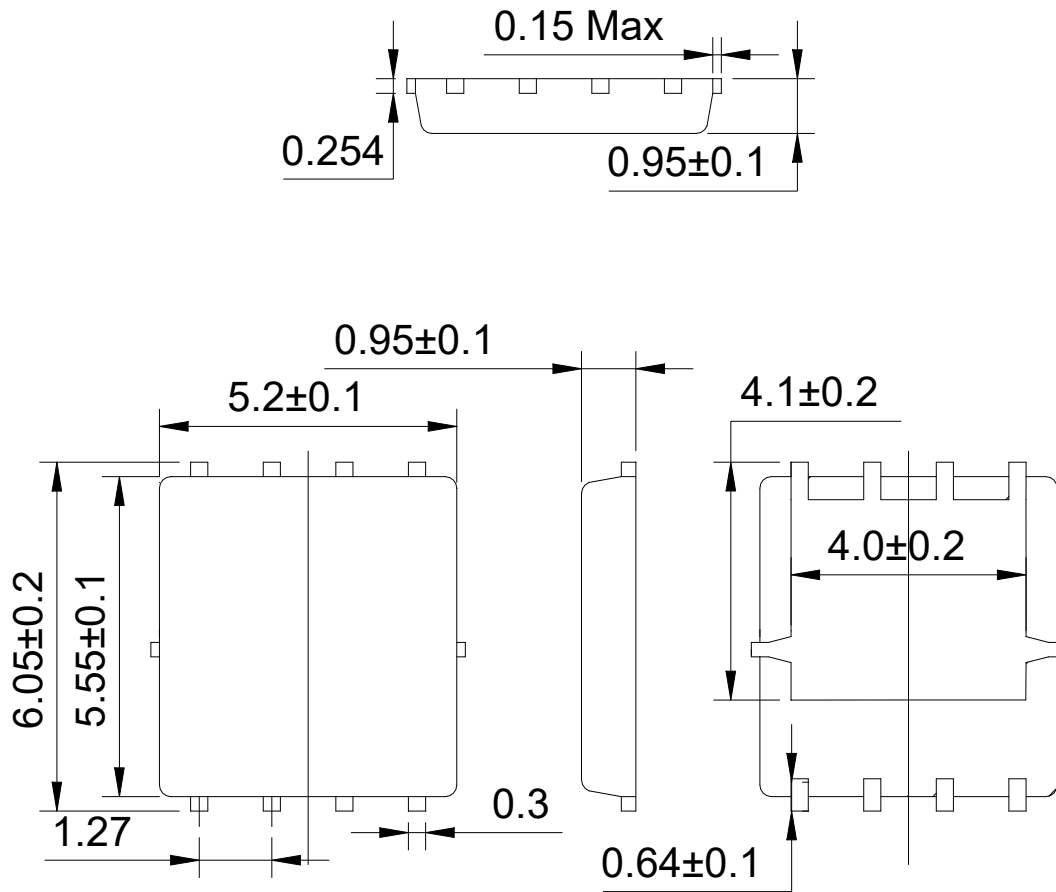
Fig.10 Switching Time Waveform





DFN5X6-8L Package Information

Unit:mm





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