# 40V, 160A, 2.2mΩ N-channel Power SGT MOSFET

## JMSH04025K3LQ

### Product Summary

| Parameters | Value | Unit |
|---|---|---|
| $V_{DSS}$ | 40 | V |
| $V_{GS(th)_Typ}$ | 2.8 | V |
| $I_D$(@$V_{GS}$=10V) | 160 | A |
| $R_{DS(ON)_Typ}$(@$V_{GS}$=10V | 2.2 | m |

### Ordering Information

| Device | Marking | MSL | Form | Package | Reel(pcs) | Per Carton (pcs) |
|---|---|---|---|---|---|---|
| JMSH04025K3LQ-13 | SH040253LQ | 1 | Tape&Reel | TO-252-3L | 5000 | 50000 |

### Absolute Maximum Ratings (@ $T_C$

| Symbol | | | Unit |
|---|---|---|---|
| $V_{DS}$ | | | V |
| $V_{GS}$ | | | V |
| | | $T_C$ = 25°C | |
| | | $T_C$ = 100°C | |
| $I_{DM}$ | | | A |
| $E_{AS}$ | | | mJ |
| | | $T_C$ = 25°C | |
| | | $T_C$ = 100°C | |
| $T_J$ STG | | | °C |

| Symbol | | | Unit |
|---|---|---|---|
| $R_{\theta JA}$ | | | |
| $R_{\theta JC}$ | | | |

## Electrical Characteristics ($T_J$ = 25°C unless otherwise specified)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $I_D$ = 250 A, $V_{GS}$ = 0V | 40 | - | - | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$ = 32V, $V_{GS}$ = 0V | - | - | 1.0 | |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{DS}$ = 0V, $V_{GS}$ = ±20V | - | - | ±100 | |
| **On Characteristics** | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_D$ = 250 A | 2.0 | 2.8 | 4.0 | V |
| $R_{DS(ON)}$ | Static Drain-Source ON-Resistance(4) | $V_{GS}$ = 10V, $I_D$ = 20A | - | 2.2 | 2.5 | m |
| **Dynamic Characteristics** | | | | | | |
| $R_g$ | Gate Resistance | f = 1MHz | - | 1.9 | - | |
| $C_{iss}$ | | $V_{GS}$ = 0V, $V_{DS}$ = 20V, f = 1MHz | - | 3690 | 5000 | pF |
| $C_{oss}$ | | | - | 1022 | 1400 | pF |
| $C_{rss}$ | | | - | 43 | 100 | pF |
| $Q_g$ | Total Gate Charge | $V_{GS}$ = 0 to 10V $V_{DS}$ = 20V, $I_D$ = 20A | - | 51 | - | nC |
| $Q_{gs}$ | Gate Source Charge | | - | 18 | - | nC |
| $Q_{gd}$ | Gate Drain("Miller") Charge | | - | 7 | - | nC |
| **Switching Characteristics** | | | | | | |
| $t_{d(on)}$ | Turn-On DelayTime | $V_{GS}$ = 10V, $V_{DD}$ = 20V $I_D$= 20A, $R_{GEN}$ = 3 | - | 16 | - | ns |
| $t_r$ | Turn-On Rise Time | | - | 32 | - | ns |
| $t_{d(off)}$ | Turn-Off DelayTime | | - | 36 | - | ns |
| $t_f$ | Turn-Off Fall Time | | - | 11 | - | ns |
| | | | | | | |
| $I_S$ | | | - | - | 160 | A |
| $I_{SM}$ | Maximum Pulsed Body Diode Forward Current | | - | - | 640 | A |
| $V_{SD}$ | Body Diode Forward Voltage | $V_{GS}$ = 0V, $I_S$ = 20A | - | | 1.2 | V |
| trr | Body Diode Reverse Recovery Time | $I_F$ = 20A, di/dt = 100A/us | 21 | 42 | 62 | ns |
| Qrr | Body Diode Reverse Recovery Charge | | - | 43 | - | nC |

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

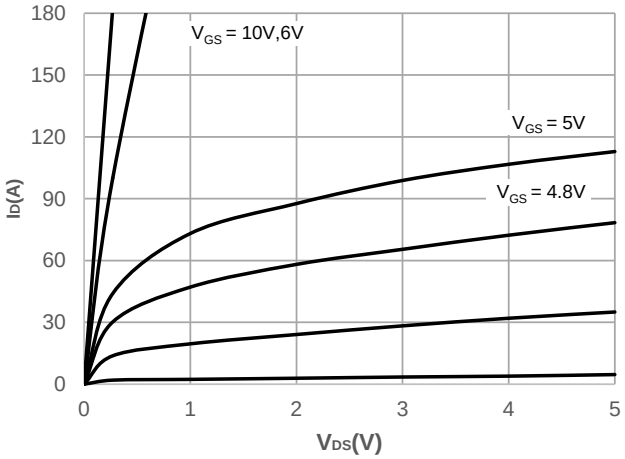
2. $E_{AS}$ condition: Starting $T_J$=25C, $V_{DD}$=20V, $V_{GS}$=10V, $R_G$=25ohm, L=3mH, $I_{AS}$=18.9A, $V_{DD}$=0V during time in avalanche.

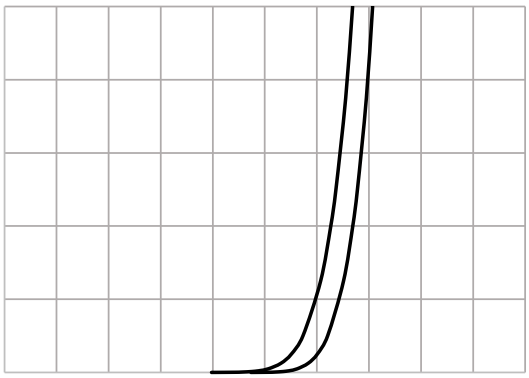
3. $R_{\theta JA}$ is measured with the device mounted on a $1inch^2$ pad of 2oz copper FR4 PCB.

4. Pulse Test: Pulse Width 300μs, Duty Cycle 0.5%.

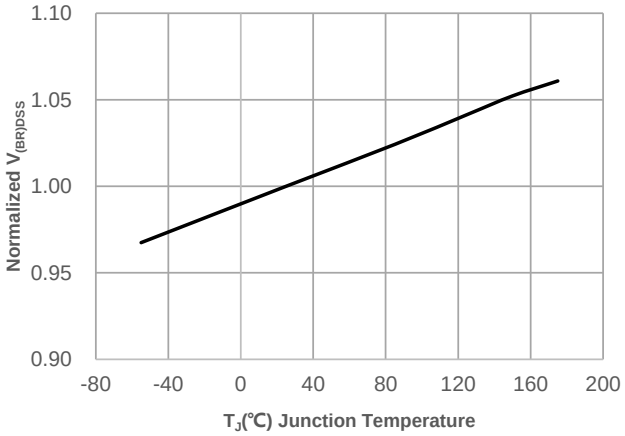
## Typical Performance Characteristics

**Figure 5: Output Characteristics**

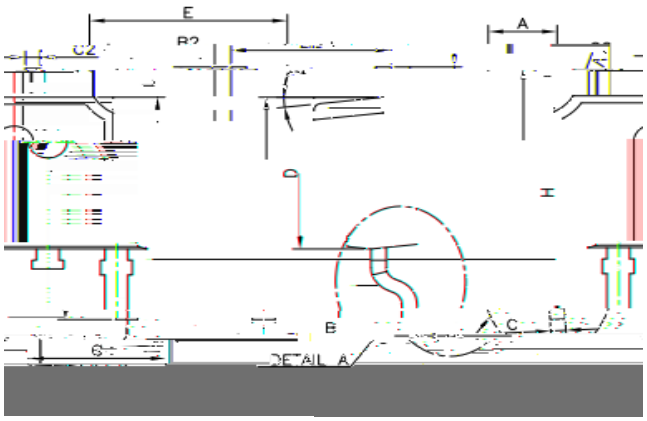


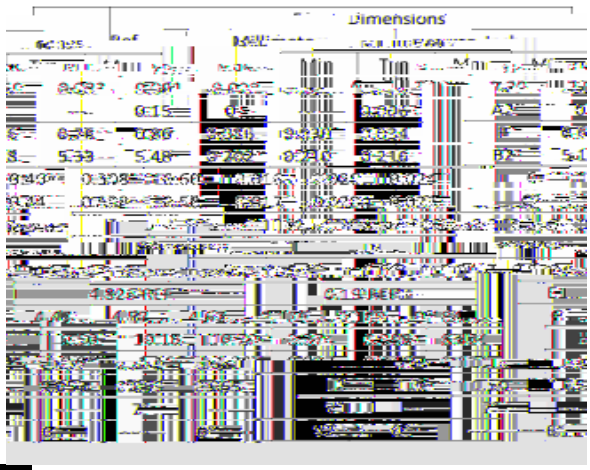



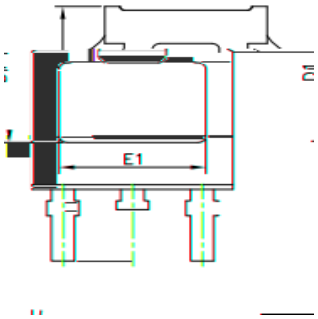
## Typical Performance Characteristics



## Package Mechanical Data(TO-252-3L)




[redacted]

Information furnished in this document is believed to be accurate and reliable.
However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.
Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.
Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.

® is a registered trademark of Jiangsu JieJie Microelectronics Co.,Ltd.


All product information is copyrighted and subject to legal disclaimers.