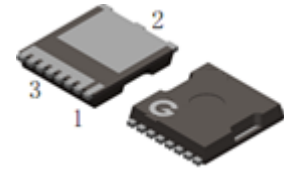
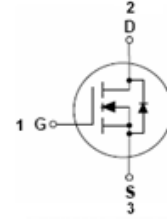


### Features

- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology
- HBM: JESD22-A114-B: 3A
- RoHS compliant with Halogen-free

HF



TOLL

### Mechanical Data

- Case: TOLL
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL011N06TH-TL	TOLL	2000 pcs / Tape & Reel	011N06TH

### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>	60	V
Gate-to-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current (Package Limited)	I <sub>D</sub>	300	A
Continuous Drain Current (T <sub>C</sub> = 25°C, Silicon Limited)		375	A
Continuous Drain Current (T <sub>C</sub> = 125°C, Silicon Limited)		217	A
Continuous Drain Current (T <sub>A</sub> = 25°C) *1		48	A
Pulsed Drain Current (t <sub>p</sub> = 10μs, T <sub>C</sub> = 25°C)	I <sub>DM</sub>	1200	A
Single Pulse Avalanche Energy *3	E <sub>AS</sub>	700	mJ
Power Dissipation (T <sub>C</sub> = 25°C, R <sub>θJC</sub> = 0.4°C/W)	P <sub>D</sub>	375	W
Operating Junction Temperature Range	T <sub>J</sub>	-55 ~ +175	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +175	°C

### Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	R <sub>θJC</sub>	-	0.4	0.5	°C/W
Thermal Resistance Junction-to-Air *1	R <sub>θJA</sub>	-	22	30	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
$V_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 1mA$	60	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 60V, V_{GS} = 0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$R_{DS(ON)}$	Drain-Source On-resistance <sup>*2</sup>	$V_{GS} = 10V, I_D = 80A$	-	0.78	1.1	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
$R_G$	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	2.2	-	$\Omega$
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V$	-	15758	-	pF
$C_{OSS}$	Output Capacitance	$V_{DS} = 30V$	-	5461	-	
$C_{RSS}$	Reverse Transfer Capacitance	$f = 1MHz$	-	177	-	
<b>Switching Characteristics</b>						
$t_{d(ON)}$	Turn-on Delay Time <sup>*4</sup>	$V_{DD} = 30V$	-	16	-	ns
$t_r$	Turn-on Rise Time <sup>*4</sup>	$V_{GS} = 10V$	-	27	-	
$t_{d(OFF)}$	Turn-Off Delay Time <sup>*4</sup>	$R_G = 1.8\Omega$	-	48	-	
$t_f$	Turn-Off Fall Time <sup>*4</sup>	$I_D = 100A$	-	23	-	
$Q_G$	Total Gate-Charge	$V_{DD} = 48V$	-	230	-	nC
$Q_{GS}$	Gate to Source Charge	$V_{GS} = 10V$	-	70	-	
$Q_{GD}$	Gate to Drain (Miller) Charge	$I_D = 80A$	-	50	-	
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage <sup>*2</sup>	$I_S = 80A, V_{GS} = 0V$	-	0.8	1.2	V
$t_{rr}$	Reverse Recovery Time	$I_S = 40A, V_{GS} = 0V$	-	118	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt = 100A/\mu s$	-	350	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
3. The  $E_{AS}$  data shows Max. rating. The test condition is  $V_{DD} = 40V, V_{GS} = 10V, L = 1mH$
4. Guaranteed by design, not subject to production

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

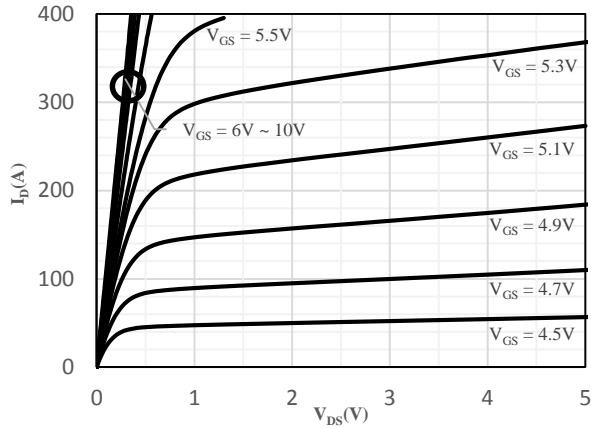


Fig 1 Typical Output Characteristics

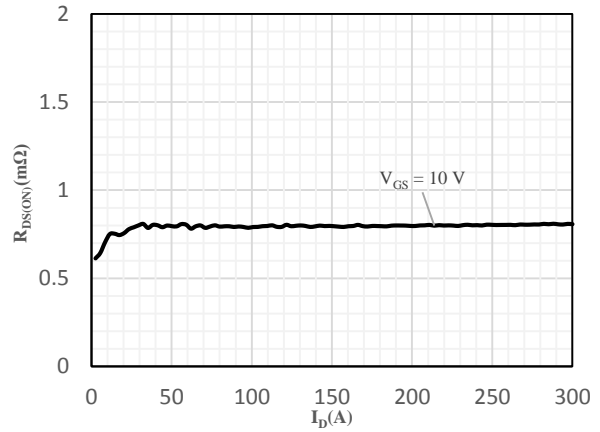


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

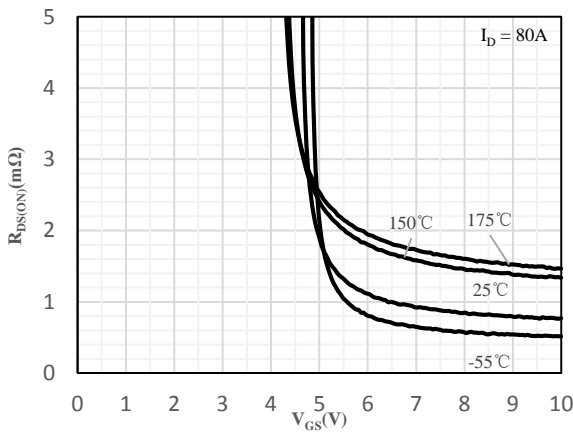


Fig 3 On-Resistance vs. Gate-Source Voltage

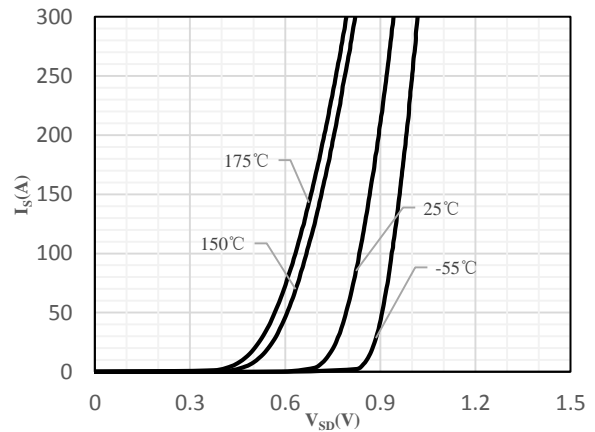


Fig 4 Body-Diode Characteristics

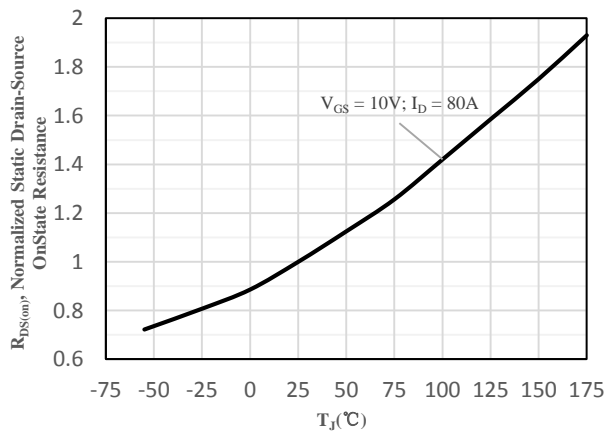


Fig 5 Normalized On-Resistance vs. Junction Temperature

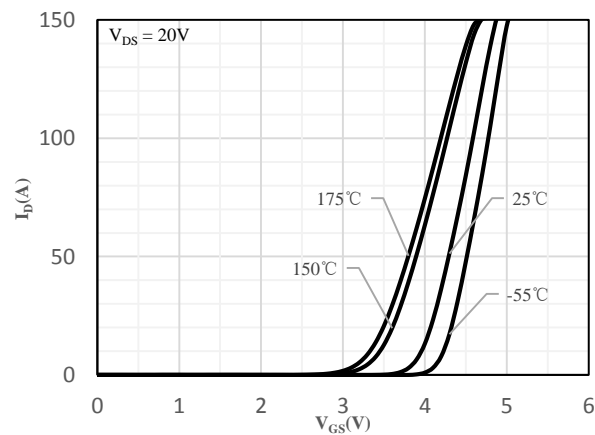


Fig 6 Transfer Characteristics

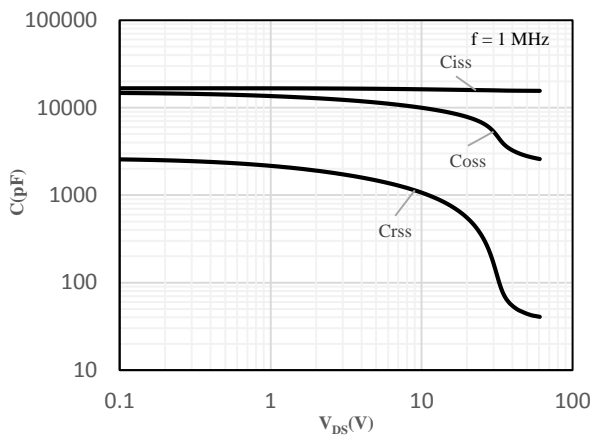


Fig 7 Capacitance Characteristics

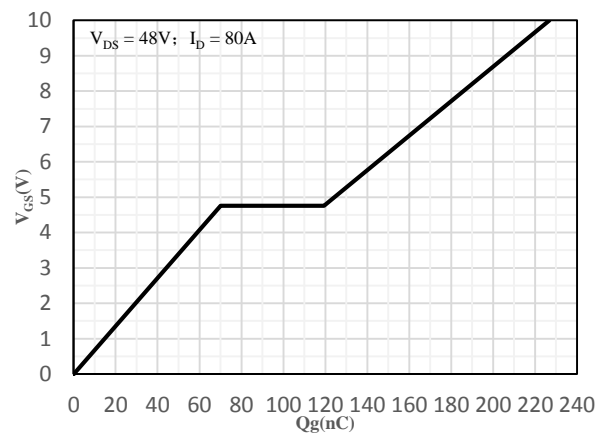


Fig 8 Gate-Charge Characteristics

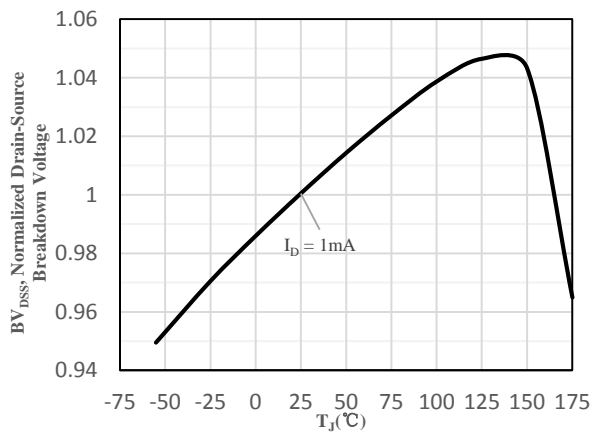


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

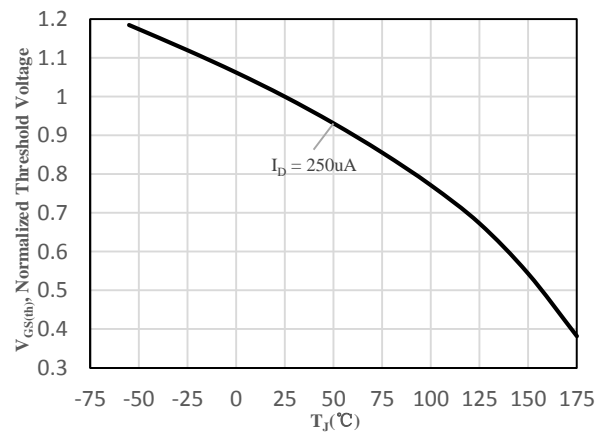


Fig 10 Normalized  $V_{GS(th)}$  vs. Junction Temperature

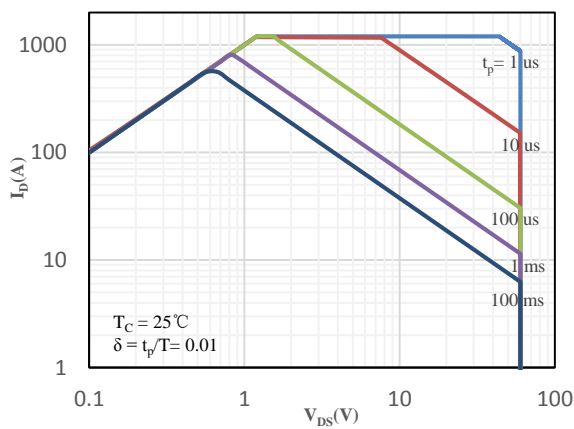


Fig 11 Safe Operation Area

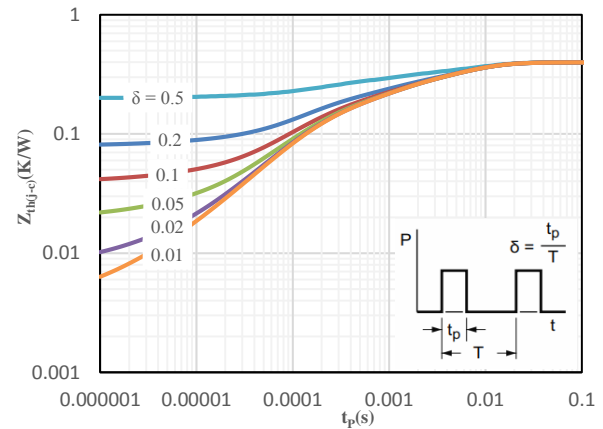
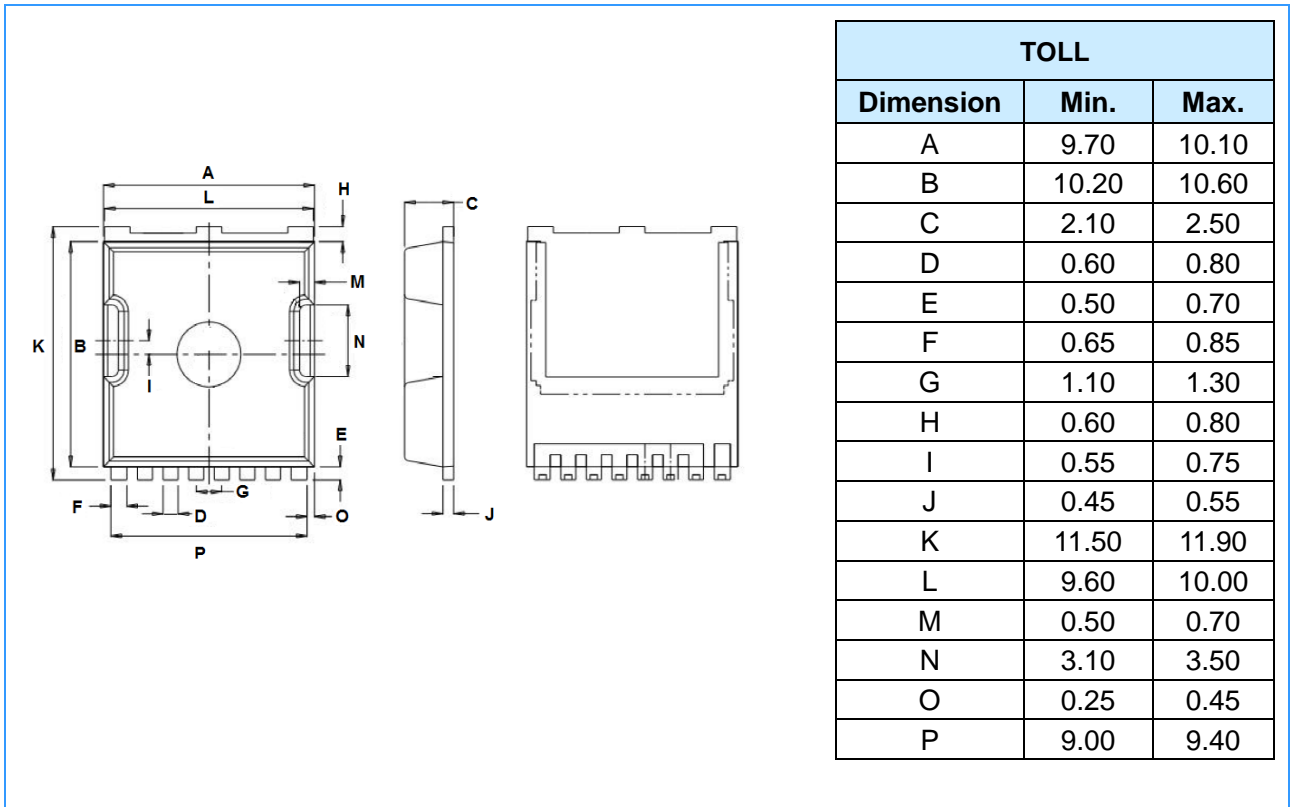


Fig 12 Maximum transient thermal impedance

**Package Outline Dimensions** (Unit: mm)



**SOLDERING FOOTPRINT** (Unit: mm)

