

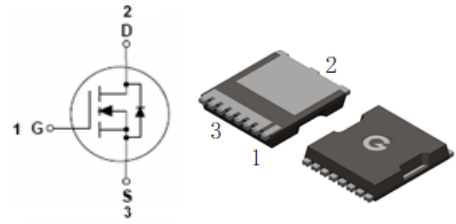
Features

- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology
- JESD22-A114-B ESD rating of class 3A per human body model

HF

Mechanical Data

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



TOLL

Ordering Information

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

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	60	V
Gate-to-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (T _C = 25°C, Silicon Limited)	I _D	375	A
Continuous Drain Current (T _C = 25°C, Package Limited)		300	A
Continuous Drain Current (T _A = 25°C)		48	A
Pulsed Drain Current (t _p = 10μs, T _C = 25°C)	I _{DM}	1200	A
Single Pulse Avalanche Energy ^{*3}	E _{AS}	700	mJ
Power Dissipation (T _C = 25°C, R _{θJC} = 0.4°C/W)	P _D	375	W
Operating Junction Temperature Range	T _J	-55 ~ +175	°C
Storage Temperature Range	T _{STG}	-55 ~ +175	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	R _{θJC}	-	0.4	0.5	°C/W
Thermal Resistance Junction-to-Air ^{*1}	R _{θJA}	-	22	30	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
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	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance ^{*2}	$V_{GS} = 10V, I_D = 80A$	-	0.78	1.1	m Ω
$V_{GS(th)}$	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	-	Ω
Dynamic Characteristics						
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	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time ^{*4}	$V_{DD} = 30V$	-	16	-	ns
t_r	Turn-on Rise Time ^{*4}	$V_{GS} = 10V$	-	27	-	
$t_{d(OFF)}$	Turn-Off Delay Time ^{*4}	$R_G = 1.8\Omega$	-	48	-	
t_f	Turn-Off Fall Time ^{*4}	$I_D = 100A$	-	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	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage ^{*2}	$I_S = 80A, V_{GS} = 0V$	-	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 inch² 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)

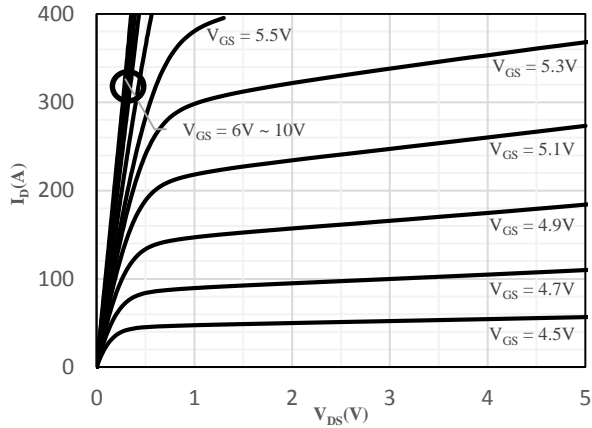


Fig 1 Typical Output Characteristics

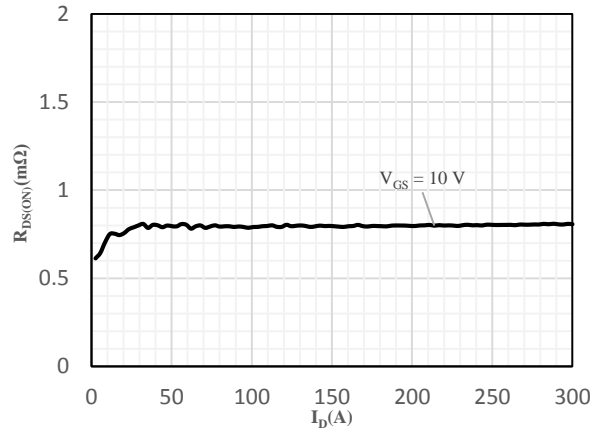


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

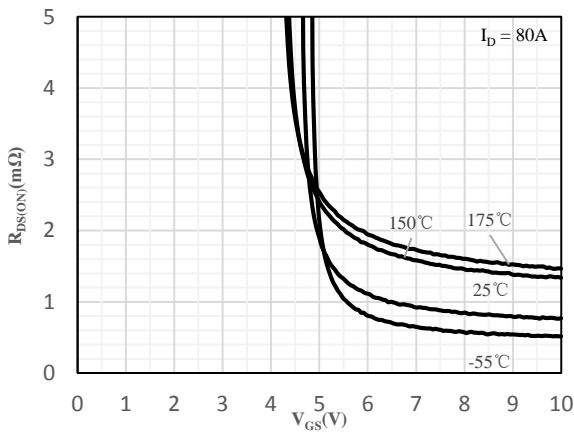


Fig 3 On-Resistance vs. Gate-Source Voltage

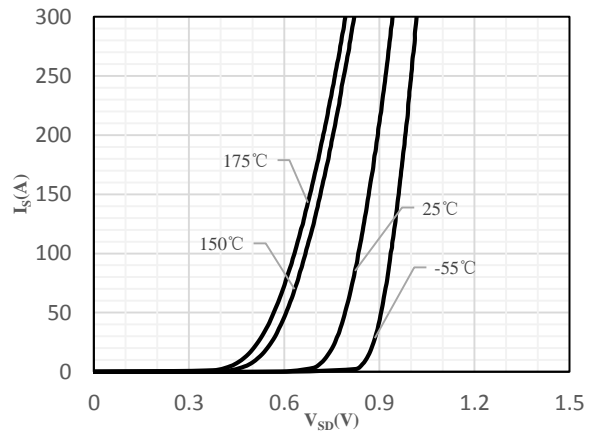


Fig 4 Body-Diode Characteristics

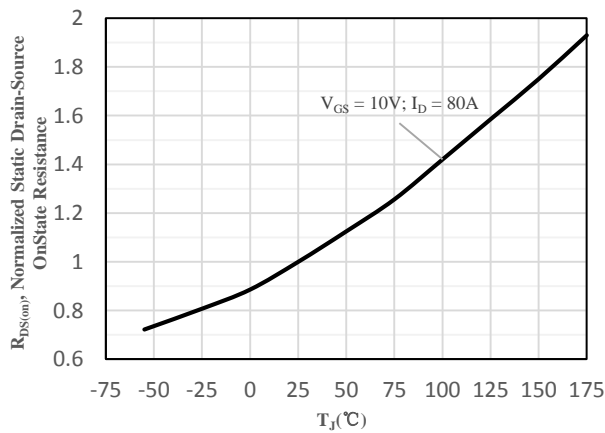


Fig 5 Normalized On-Resistance vs. Junction Temperature

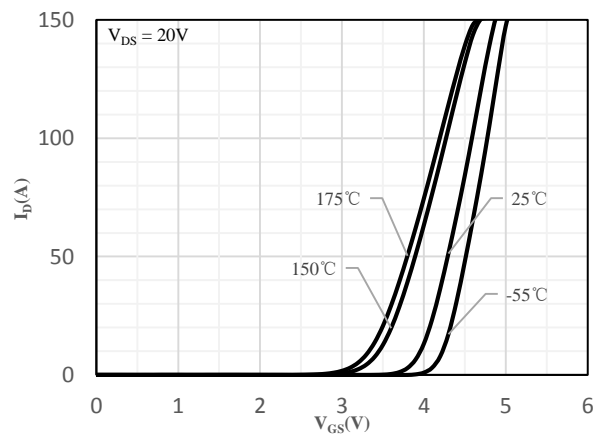


Fig 6 Transfer Characteristics

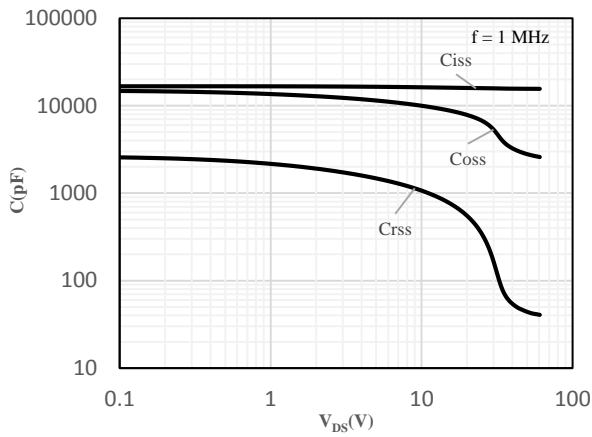


Fig 7 Capacitance Characteristics

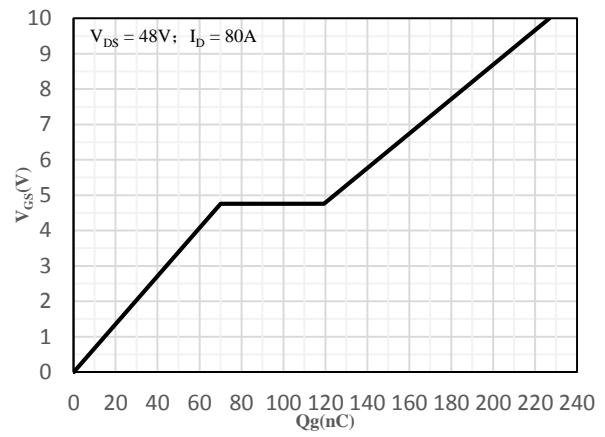


Fig 8 Gate-Charge Characteristics

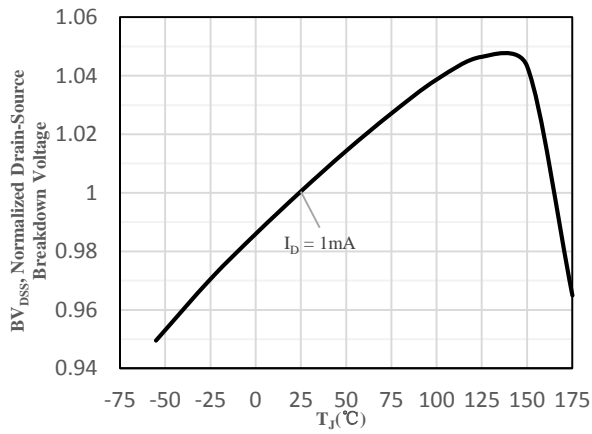


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

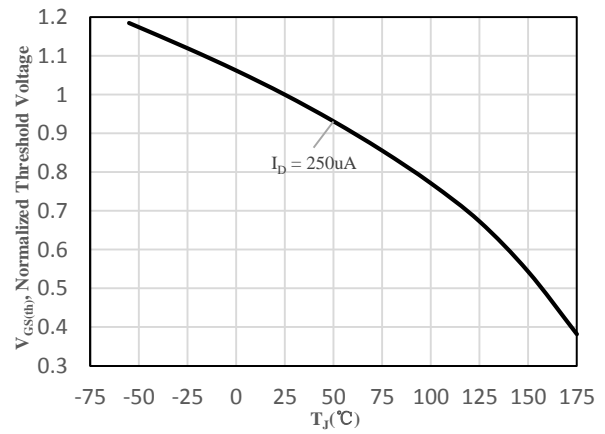


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

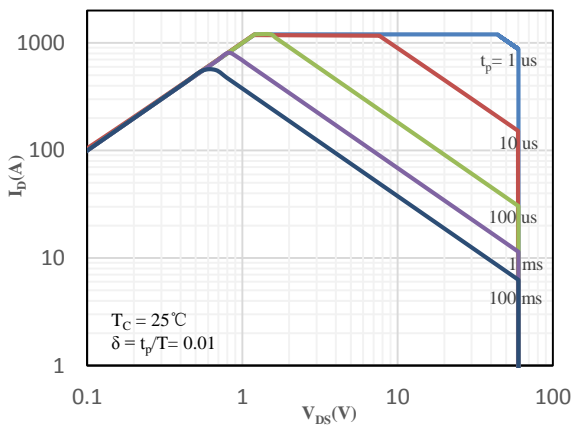


Fig 11 Safe Operation Area

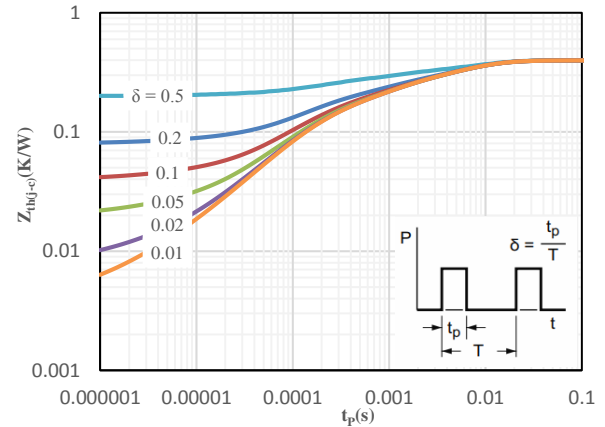
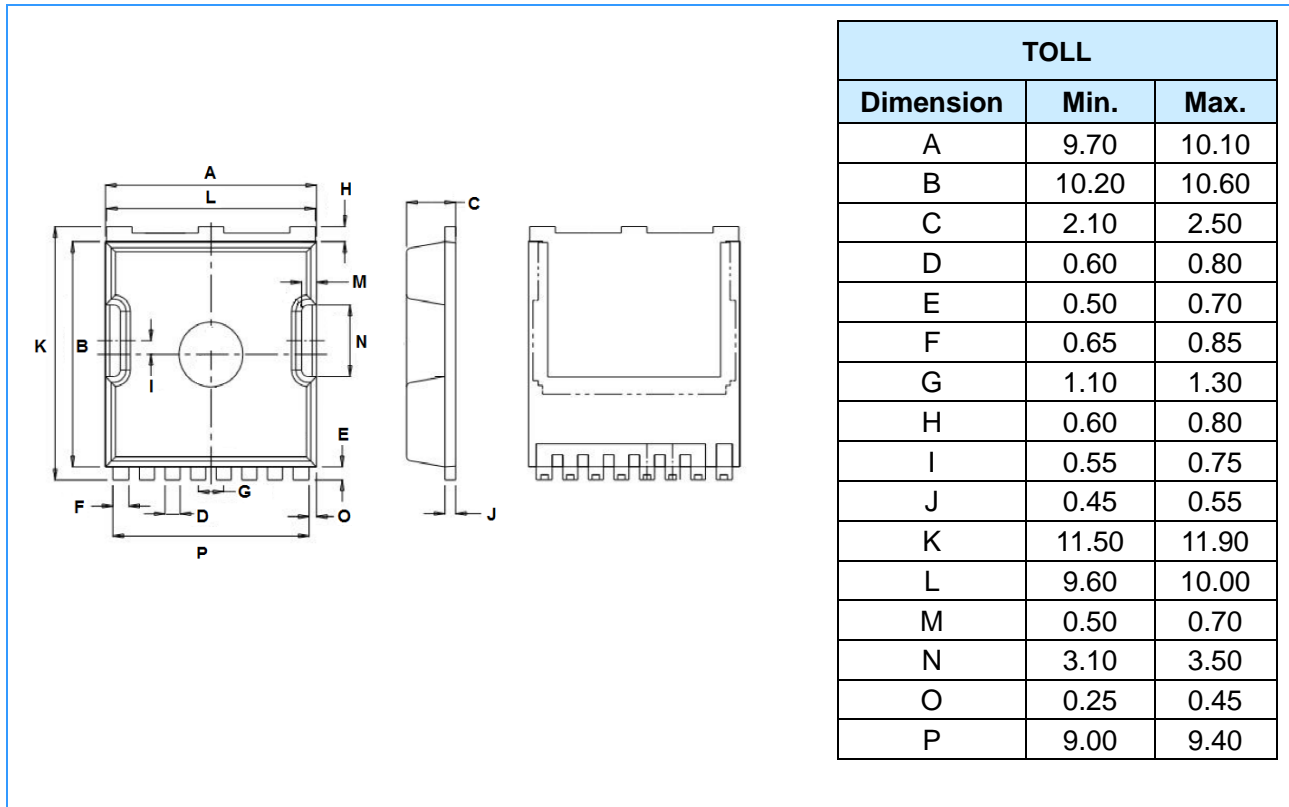
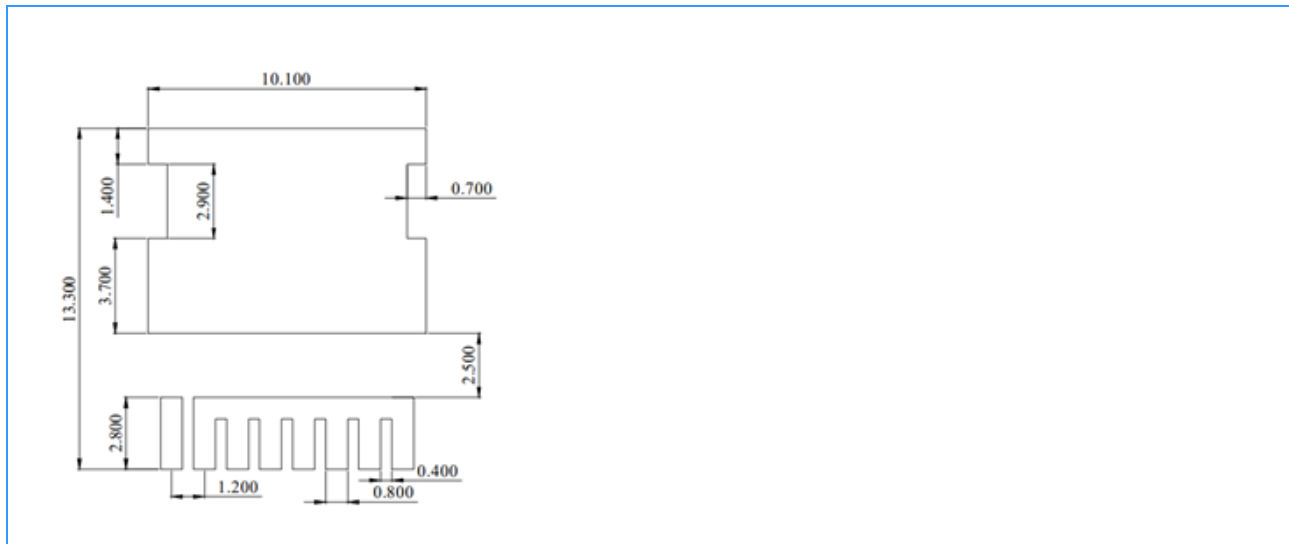


Fig 12 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



SOLDERING FOOTPRINT (Unit: mm)



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