

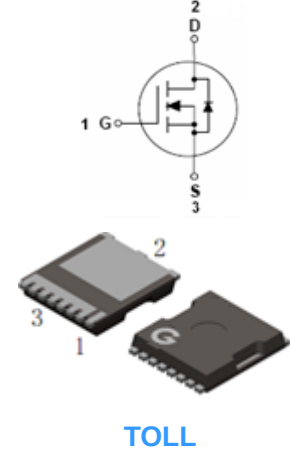
Features

- Advanced shielded-gate trench technology
- Ultra-low on-resistance
- Low gate-charge
- HBM: JESD22-A114-B: 2
- RoHS compliant with Halogen-free

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



Ordering Information

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

Maximum Ratings (@ T_C = 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 (Package Limited)	I _D	300	A
Continuous Drain Current (T _C = 25°C, Silicon Limited)		375	
Continuous Drain Current (T _C = 100°C, Silicon Limited)		265	
Continuous Drain Current (T _A = 25°C) *1		48	
Continuous Drain Current (T _A = 100°C) *1		34	
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)	P _D	300	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

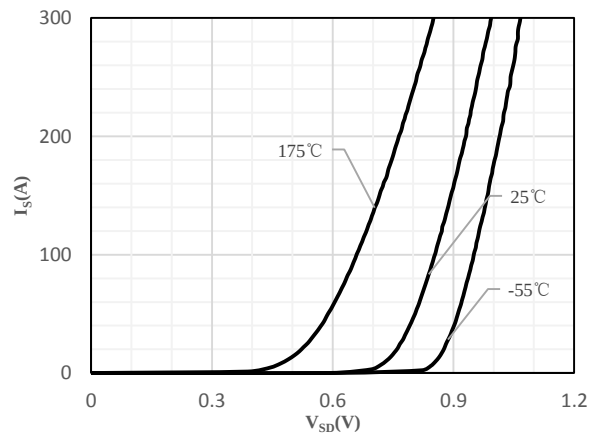
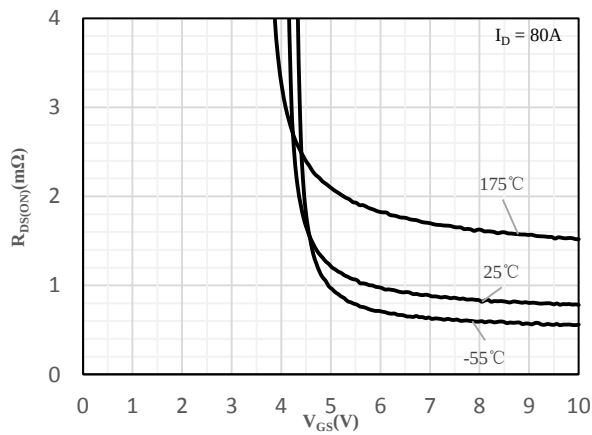
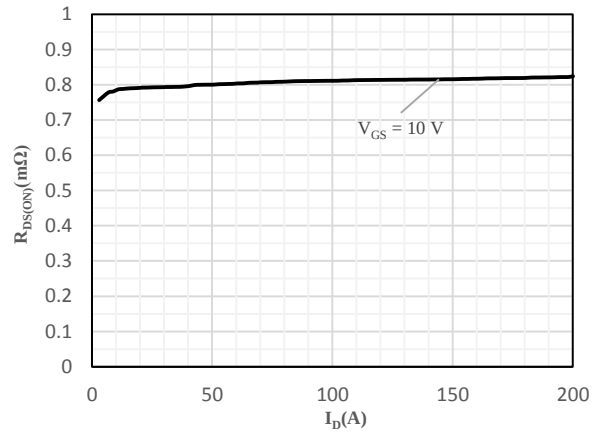
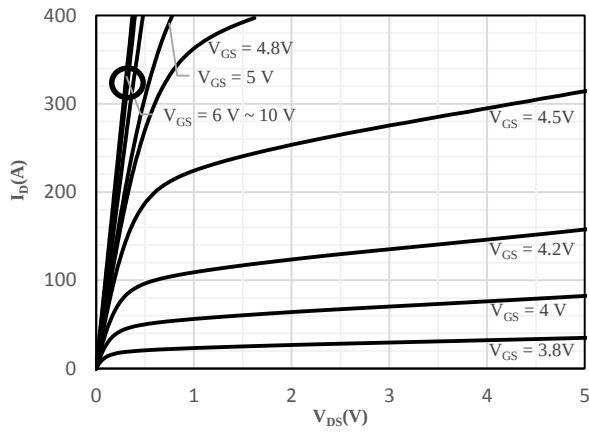
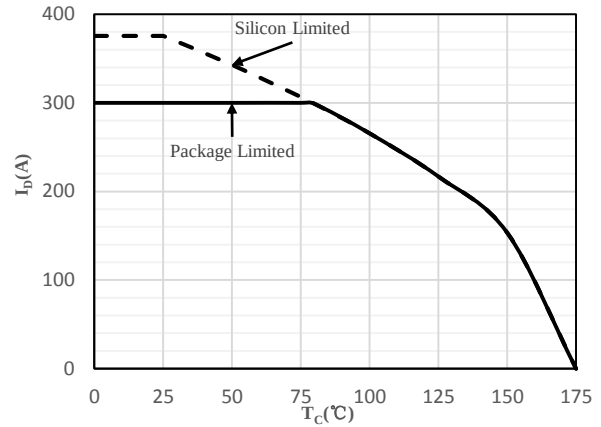
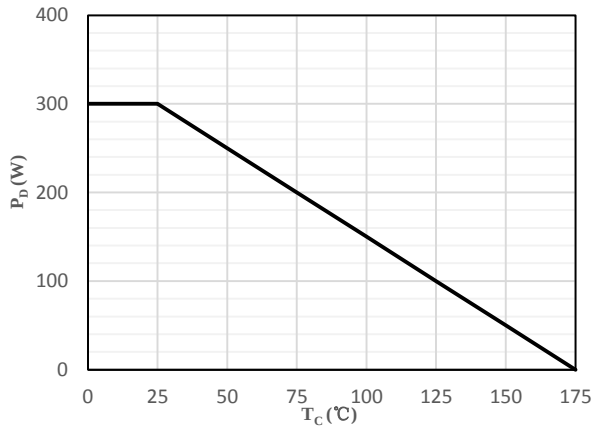
Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

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} = ±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	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	2.5	4	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	1.1	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	13000	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 30V	-	3500	-	
C _{RSS}	Reverse Transfer Capacitance	f = 100kHz	-	230	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = 30V	-	43	-	ns
t _r	Turn-on Rise Time *4	V _{GS} = 10V	-	110	-	
t _{d(OFF)}	Turn-Off Delay Time *4	R _G = 4Ω	-	103	-	
t _f	Turn-Off Fall Time *4	I _D = 100A	-	122	-	
Q _G	Total Gate-Charge	V _{DD} = 48V	-	192	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	48	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 80A	-	43	-	
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	-	103	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	-	222	-	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)



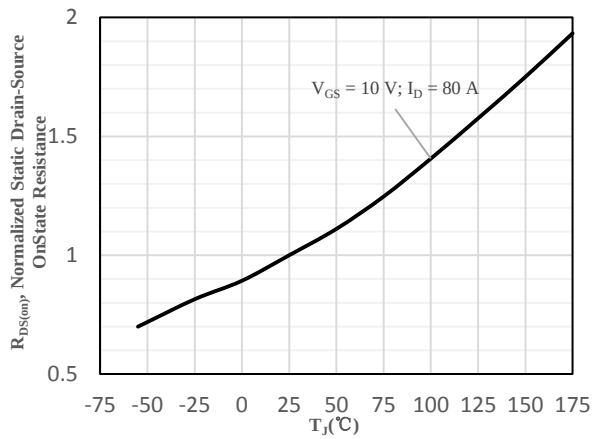


Fig 7 Normalized On-Resistance vs. Junction Temperature

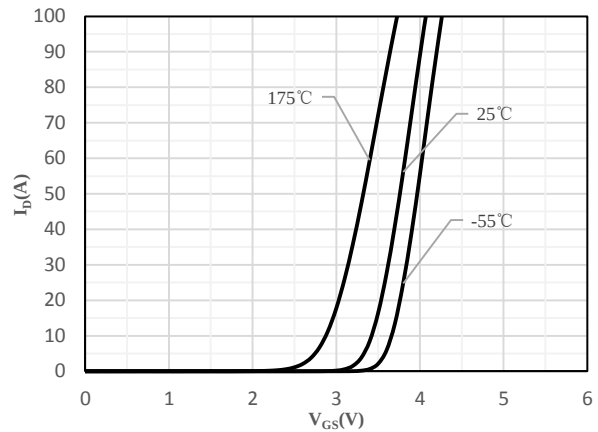


Fig 8 Transfer Characteristics

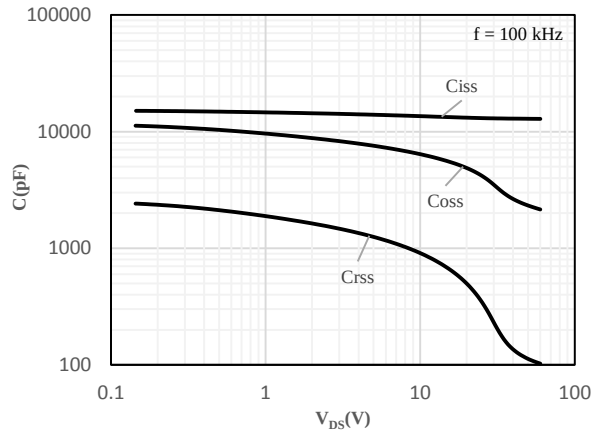


Fig 9 Capacitance Characteristics

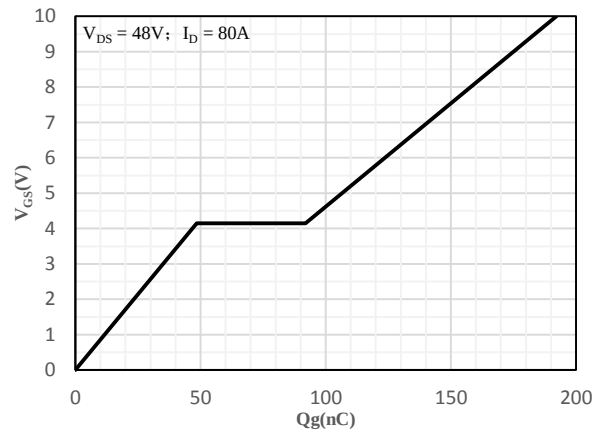


Fig 10 Gate-Charge Characteristics

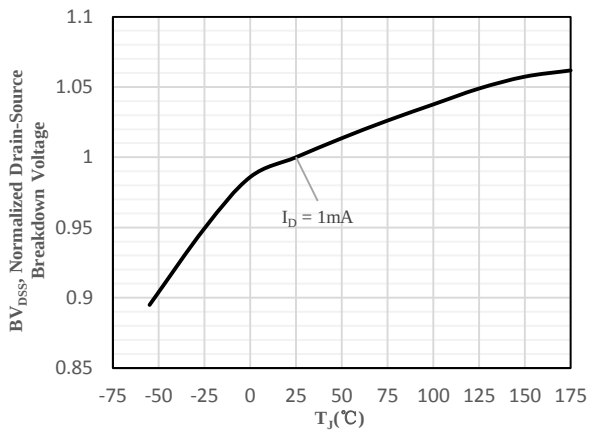


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

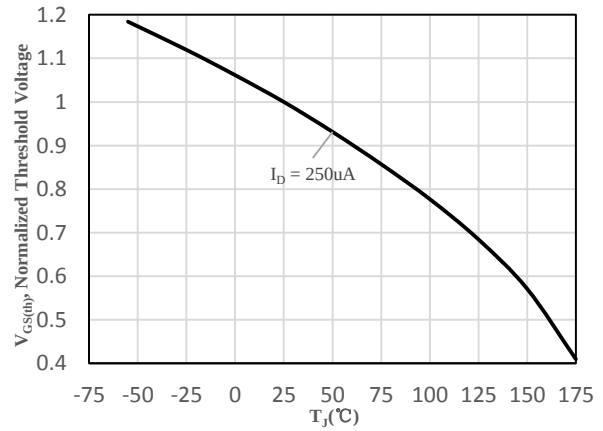


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

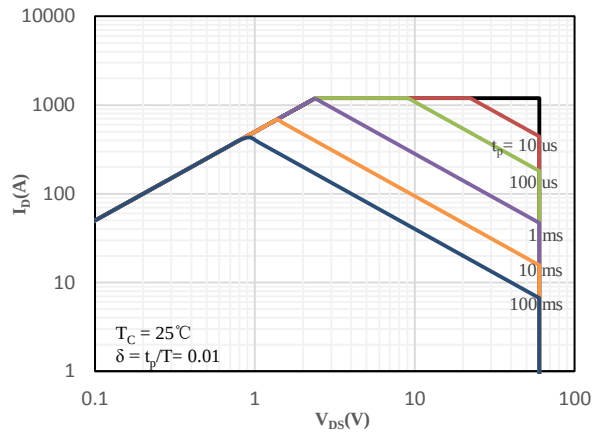


Fig 13 Safe Operating Area

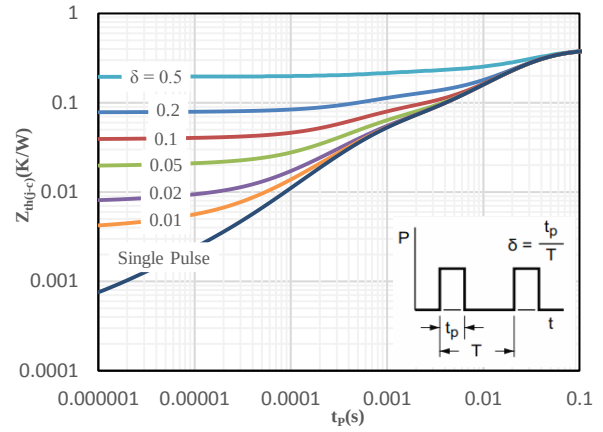
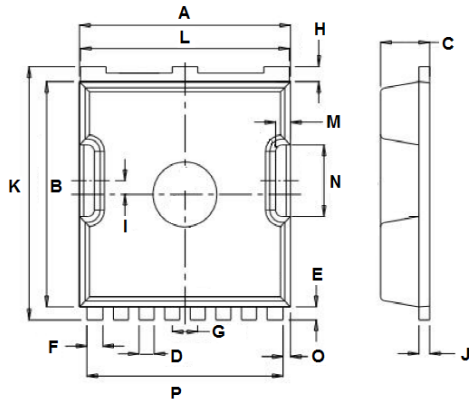


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



TOLL		
Dimension	Min.	Max.
A	9.70	10.10
B	10.20	10.60
C	2.10	2.50
D	0.60	0.80
E	0.50	0.70
F	0.65	0.85
G	1.10	1.30
H	0.60	0.80
I	0.55	0.75
J	0.45	0.55
K	11.50	11.90
L	9.60	10.00
M	0.50	0.70
N	3.10	3.50
O	0.25	0.45
P	9.00	9.40

Soldering Footprint (Unit: mm)

