

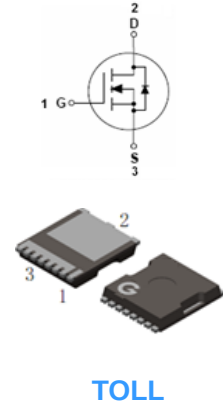
Features

- Advanced Shielded-Gate Trench technology
- Low on-resistance
- Low thermal resistance
- 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
BL018N10TH-TL	TOLL	2000 pcs / Tape & Reel	018N10TH

Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$)	I_D	270	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)		170	A
Continuous Drain Current ($T_A = 25^\circ\text{C}$) ^{*1}		30	A
Continuous Drain Current ($T_A = 100^\circ\text{C}$) ^{*1}		19	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_C = 25^\circ\text{C}$)	I_{DM}	1080	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	3000	mJ
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	250	W
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	0.35	0.5	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	-	20	40	$^\circ\text{C/W}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	100	-	-	V
		V _{GS} = 0V, I _D = 1mA	100	-	-	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, 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 = 40A	-	1.75	1.88	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	1.8	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 50V f = 100kHz	-	10940	-	pF
C _{OSS}	Output Capacitance		-	1390	-	
C _{RSS}	Reverse Transfer Capacitance		-	60	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 50V V _{GS} = 15V R _G = 3.3Ω I _D = 50A	-	51	-	ns
t _r	Turn-on Rise Time		-	123	-	
t _{d(OFF)}	Turn-Off Delay Time		-	145	-	
t _f	Turn-Off Fall Time		-	41	-	
Q _G	Total Gate-Charge	V _{DD} = 50V V _{GS} = 10V I _D = 100A	-	182	-	nC
Q _{GS}	Gate to Source Charge		-	52	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	55	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _S = 100A, V _{GS} = 0V	-	0.86	1.2	V
t _{rr}	Reverse Recovery Time	I _F = 40A, V _{GS} = 0V	-	97	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	-	248	-	nC

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 80V, V_{GS} = 10V, L = 50mH$

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

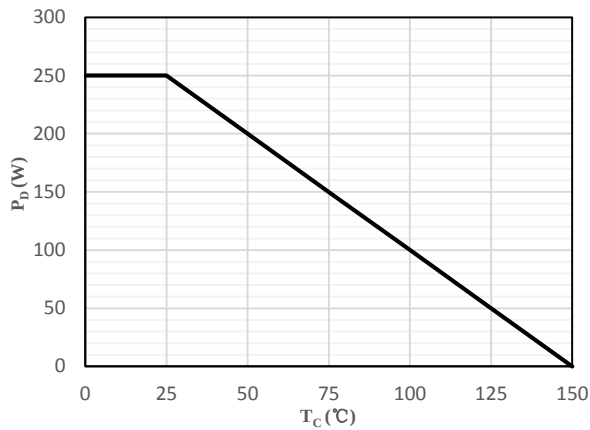


Fig 1 Power Dissipation

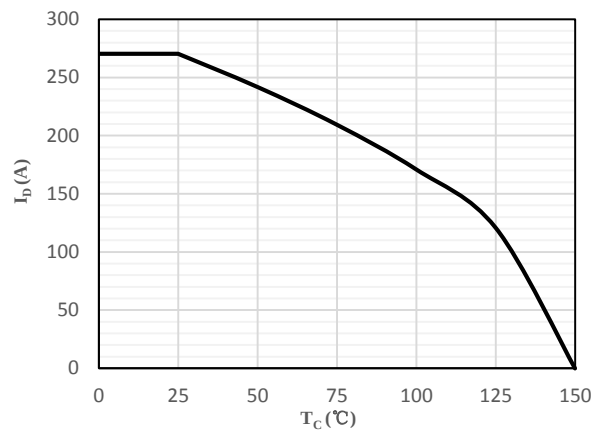


Fig 2 Drain Current

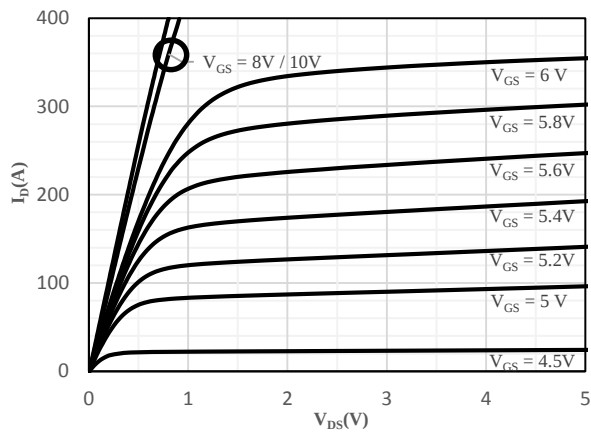


Fig 3 Typical Output Characteristics

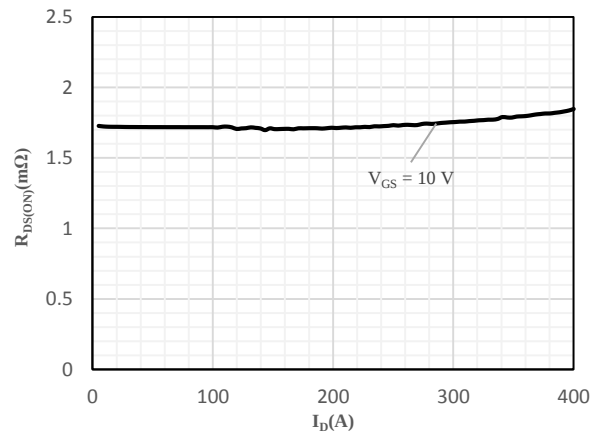


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

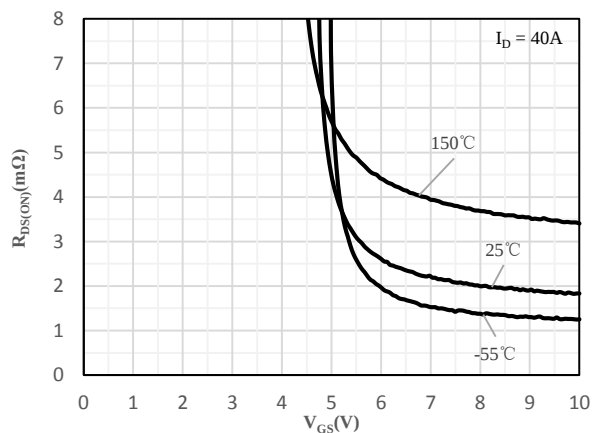


Fig 5 On-Resistance vs. Gate-Source Voltage

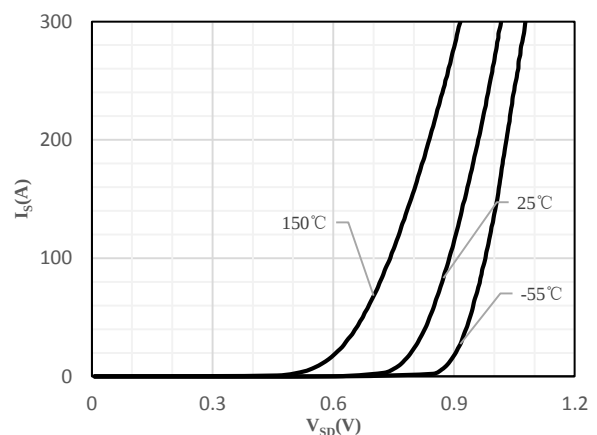


Fig 6 Body-Diode Characteristics

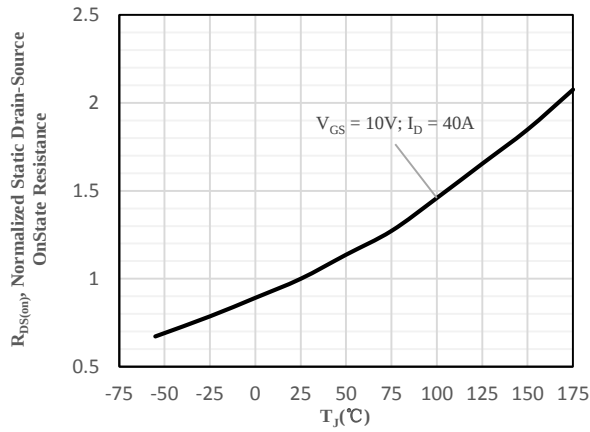


Fig 7 Normalized On-Resistance vs. Junction Temperature

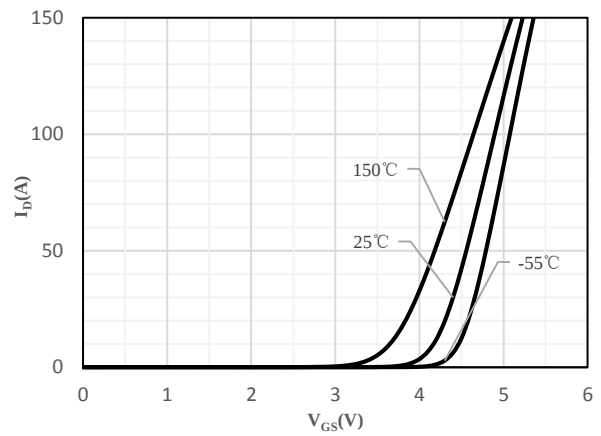


Fig 8 Transfer Characteristics

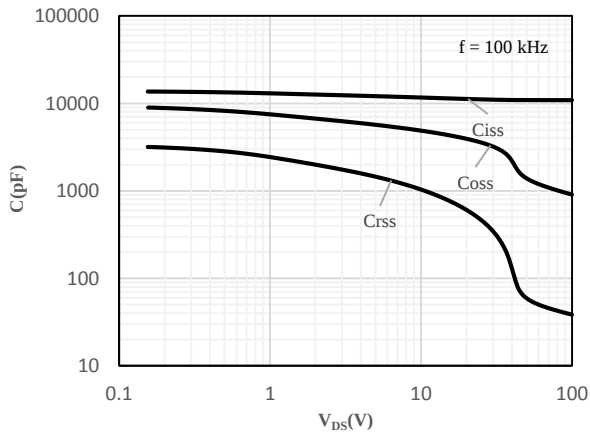


Fig 9 Capacitance Characteristics

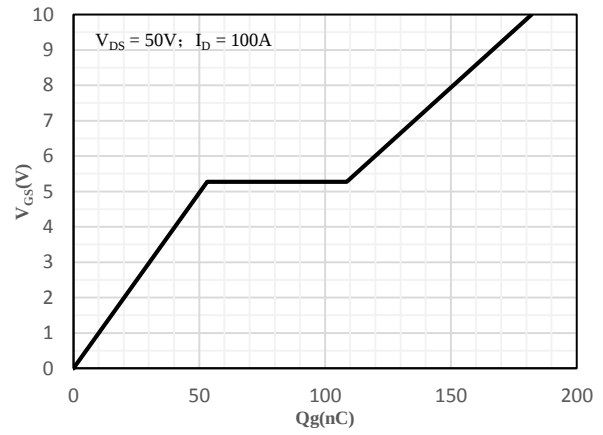


Fig 10 Gate-Charge Characteristics

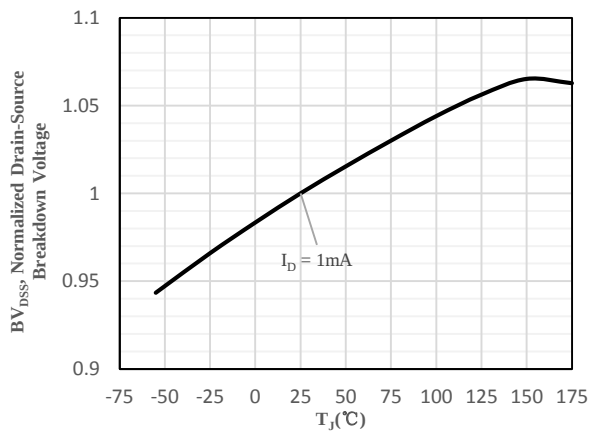


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

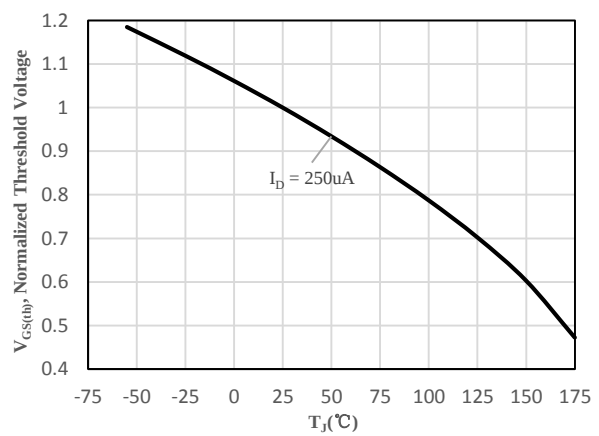


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

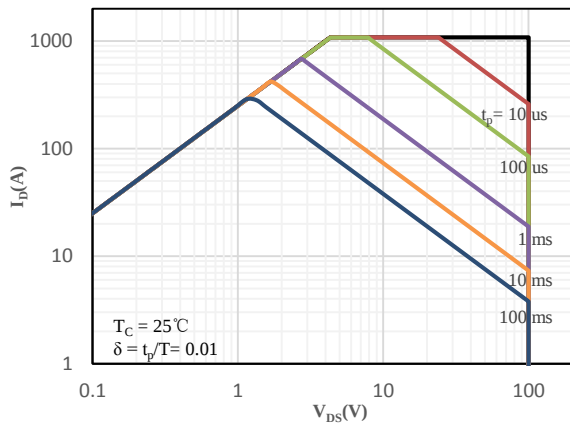


Fig 13 Safe Operating Area

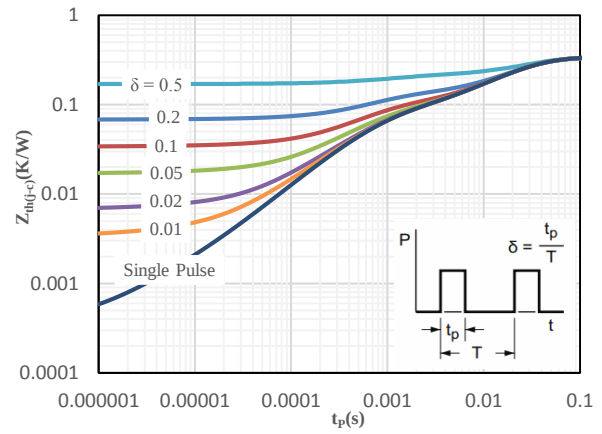
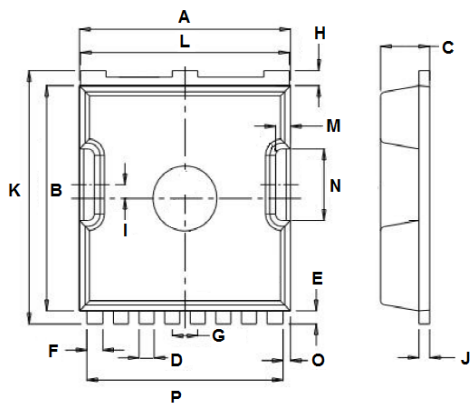


Fig 14 Maximum transient thermal impedance

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)

