

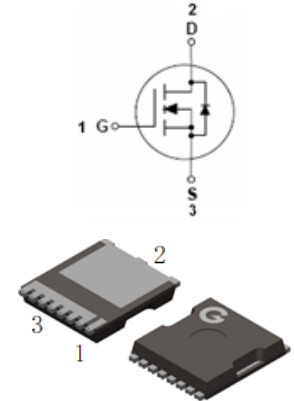
Features

- Advanced SGT technology
- Extremely low on-resistance $R_{DS(ON)}$
- Excellent gate charge $\times R_{DS(ON)}$ product(FOM)
- HBM: JESD22-A114-B: 2

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
BL020N08TH-TL	TOLL	2000pcs / Tape & Reel	LR020N08S1

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	80	V
Gate-to-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$)	I_D	240	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)		150	A
Continuous Drain Current ($T_A = 25^\circ\text{C}$) ^{*1}		28	A
Continuous Drain Current ($T_A = 100^\circ\text{C}$) ^{*1}		18	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_C = 25^\circ\text{C}$)	I_{DM}	960	A
Single Pulse Avalanche Energy ^{*4}	E_{AS}	520	Mj
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	231	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	$R_{\theta JC}$	-	0.27	0.54	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	-	20	40	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*2}		-	-	60	$^\circ\text{C/W}$

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 = 250μA	80	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 80V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 80V, V _{GS} = 0V, T _J = 125°C	-	-	100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *3	V _{GS} = 10V, I _D = 80A	-	1.5	2	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	2.8	4	V
g _{fs}	Transconductance	V _{DS} = 5V, I _D = 40A	-	145	-	S
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	19981	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 40V	-	2298	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	1441	-	
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	2	-	Ω
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *5	V _{DD} = 40V V _{GS} = 10V R _L = 3Ω	-	38	-	ns
t _r	Turn-on Rise Time *5		-	132	-	
t _{d(OFF)}	Turn-Off Delay Time *5		-	126	-	
t _f	Turn-Off Fall Time *5		-	153	-	
Q _G	Total Gate-Charge	V _{DD} = 40V	-	217	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	63	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 80A	-	56	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *3	I _{SD} = 50A, V _{GS} = 0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _F = 40A	-	112	-	ns
Q _{rr}	Reverse Recovery Charge	dI _F /dt = 100A/μs	-	290	-	nC

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
- The data tested by surface mounted on a minimum recommended FR-4 board
- 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 $V_{DD} = 40V, V_{GS} = 10V, L = 0.5mH$
- Guaranteed by design, not subject to production

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

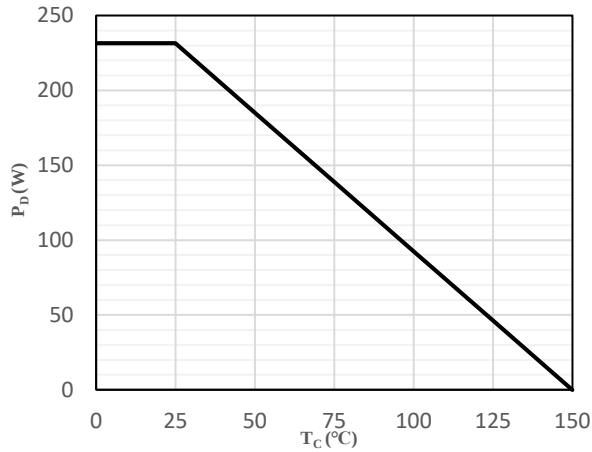


Fig 1 Power Dissipation

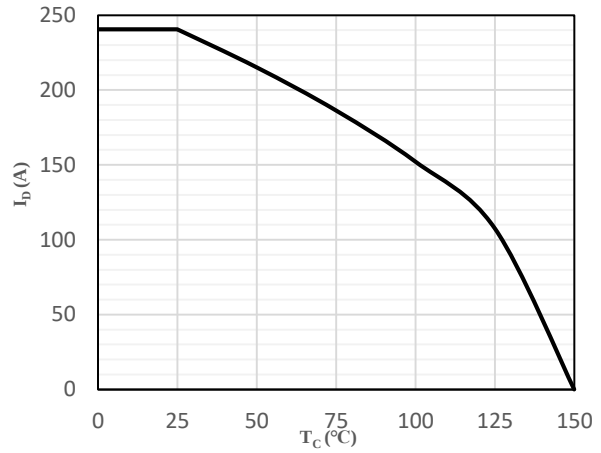


Fig 2 Drain Current

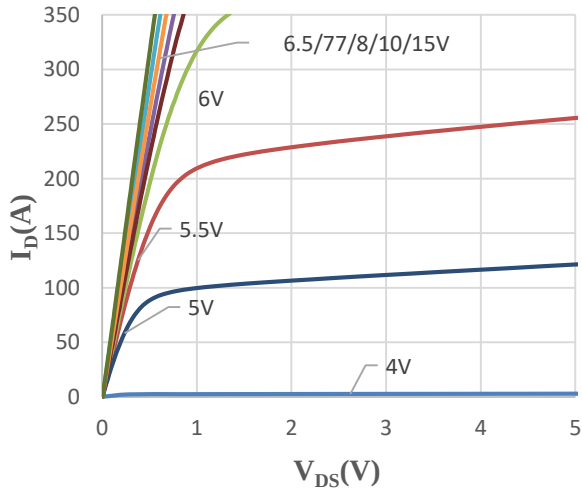


Fig 3 Typical Output Characteristics

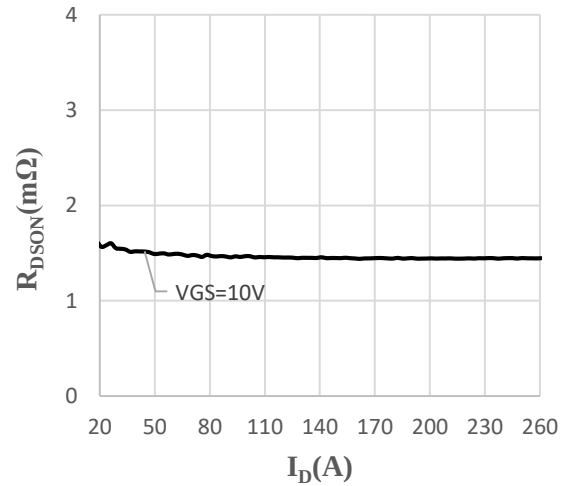


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

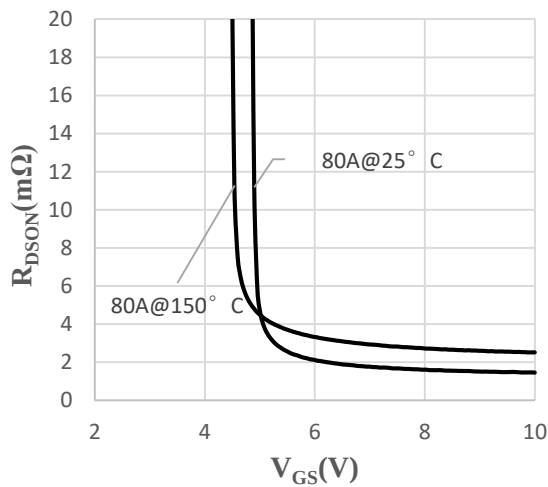


Fig 5 On-Resistance vs. Gate-Source Voltage

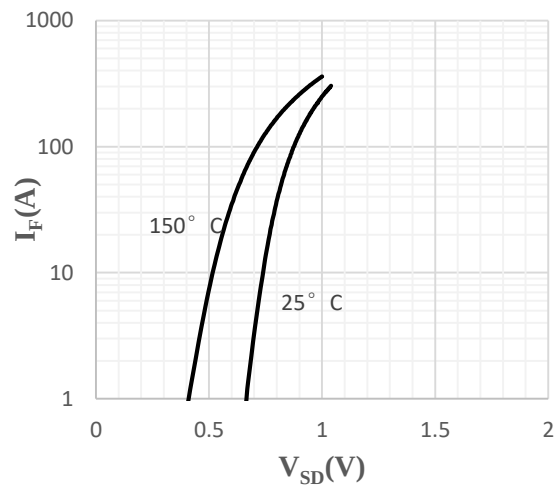


Fig 6 Body-Diode Characteristics

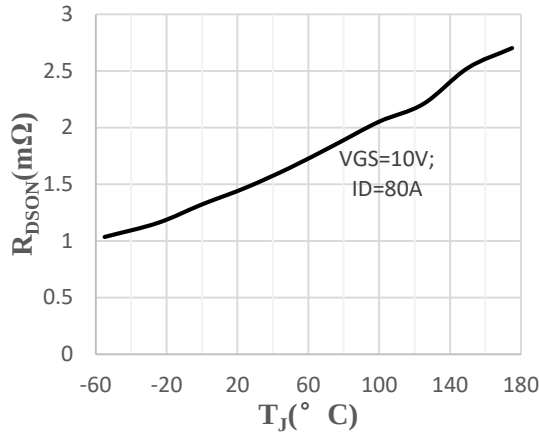


Fig 7 On-Resistance vs. Junction Temperature

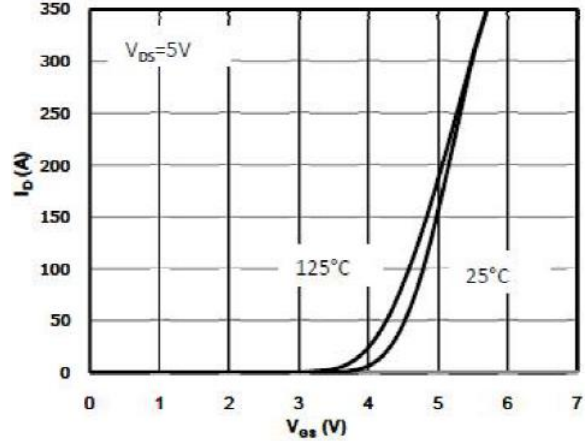


Fig 8 Transfer Characteristics

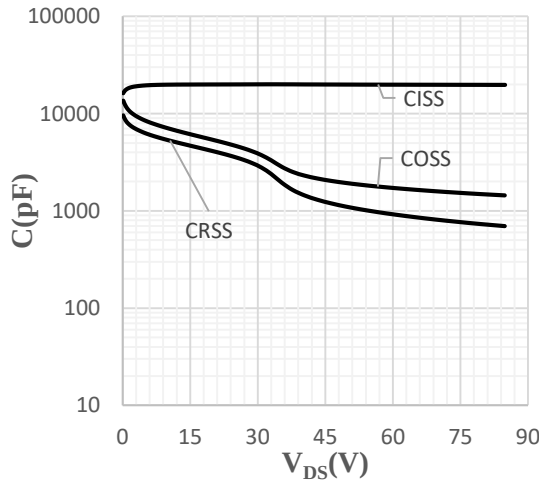


Fig 9 Capacitance Characteristics

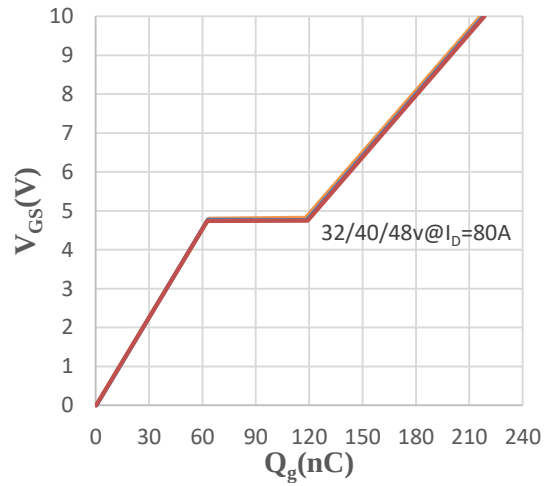


Fig 10 Gate-Charge Characteristics

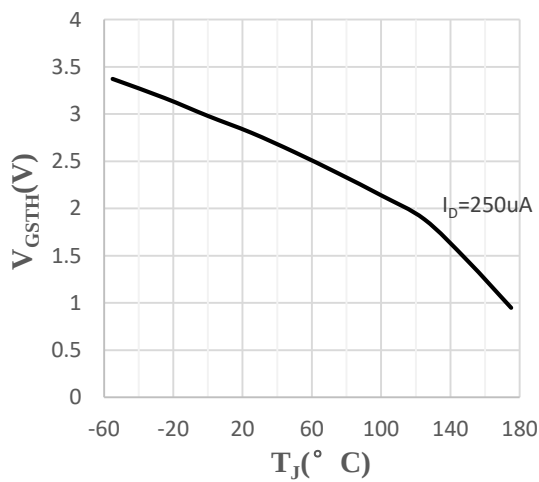


Fig 11 $V_{GS(th)}$ vs. Junction Temperature

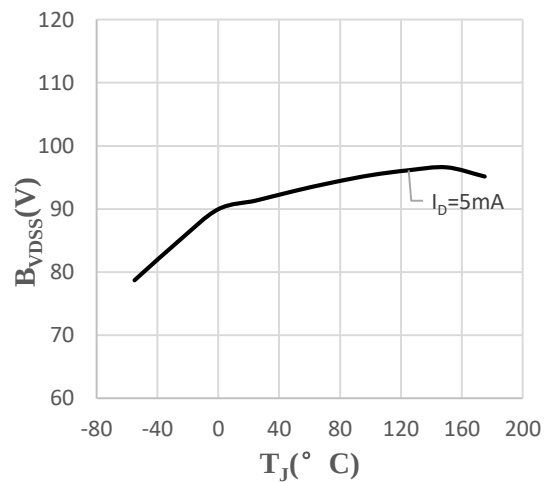


Fig 12 Breakdown Voltage vs. Junction Temperature

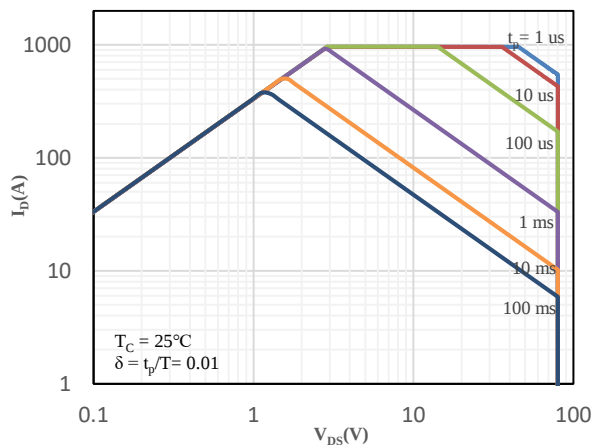


Fig 13 Safe Operation Area

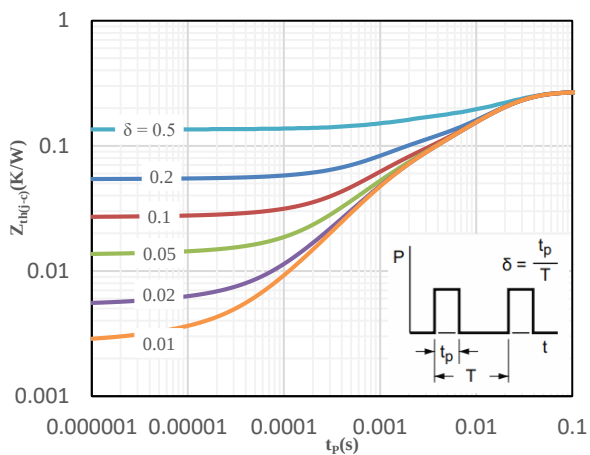
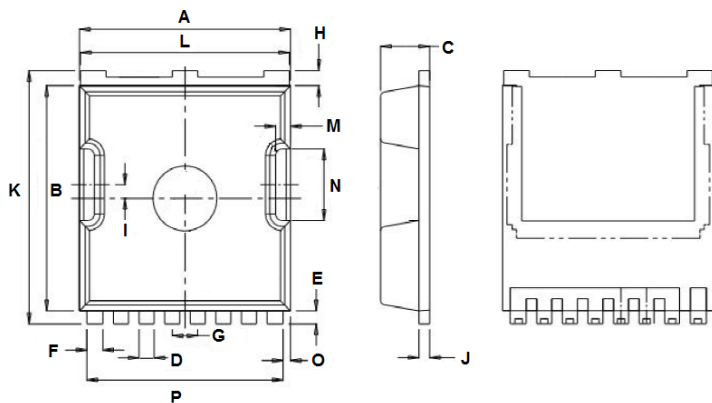


Fig 14 Maximum transient thermal impedance

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)

