N-Channel Enhancement Mode MOSFET

BL014N04T-TL

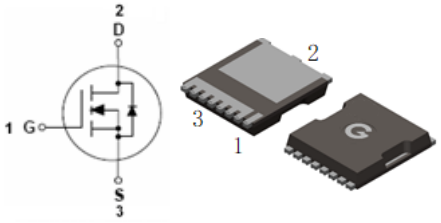
Features

- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology

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
BL014N04T-TL	TOLL	2000 pcs / Tape & Reel	014N04T

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	40	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (Package Limited)	I_D	130	A
Continuous Drain Current (T_C = 25°C, Silicon Limited) *1		328	A
Continuous Drain Current (T_C = 100°C, Silicon Limited) *1		207	A
Pulsed Drain Current *4	I_{DM}	240	A
Single Pulse Avalanche Energy *5	E_{AS}	69	mJ
Avalanche Current *6	I_{AS}	39	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_C = 25°C)	P_D	250	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.5	°C/W
Thermal Resistance Junction-to-Air *3	$R_{\theta JA}$	45	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_J = 25°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	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 40V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS} = 10V,I_D = 20A	-	1.1	1.4	mΩ
		V_{GS} = 4.5V,I_D = 20A	-	1.4	1.8	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	1.5	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 20V f = 150KHz	-	6461	-	pF
C_{OSS}	Output Capacitance		-	3257	-	
C_{RSS}	Reverse Transfer Capacitance		-	196	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 20V V_{GS} = 4.5V R_G = 3Ω I_D = 20A	-	24	-	ns
t_r	Turn-on Rise Time		-	84	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	62	-	
t_f	Turn-Off Fall Time		-	20	-	
Q_G	Total Gate-Charge	V_{DD} = 20V V_{GS} = 4.5V I_D = 20A	-	55	-	nC
Q_{GS}	Gate to Source Charge		-	15	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	19	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_S = 50A, V_{GS} = 0V	-	0.8	-	V
trr	Reverse Recovery Time	I_S = 20A, V_{GS} = 0V di/dt = 100A/μs	-	171	-	ns
Qrr	Reverse Recovery Charge		-	381	-	nC

Notes:

1. Rated according to $R_{\theta JC}$
2. Rated according to $R_{\Theta ja}$
3. Surface−mounted on 1 inch² FR4 board, 2 oz Cu
4. Limited by maximum T_J
5. Starting T_J = 25°C, V_{DD} = 30V, V_{GS} = 10V, L = 0.1mH
6. Pulse width limited by maximum T_J

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

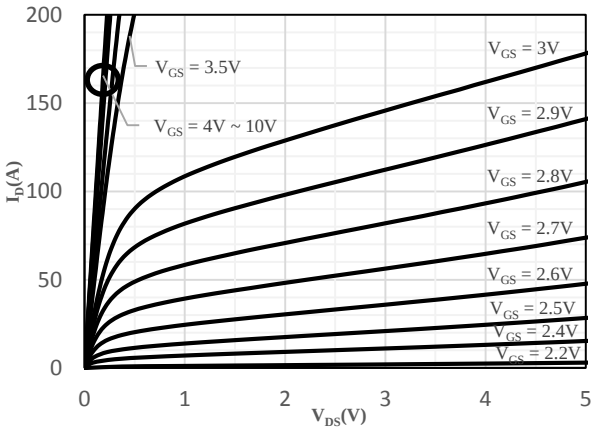


Fig 1 Typical Output Characteristics

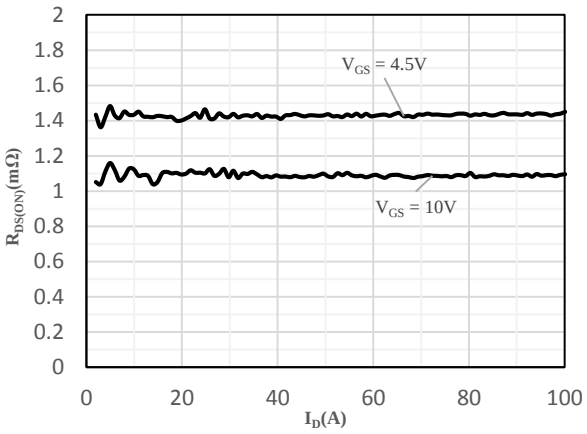


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

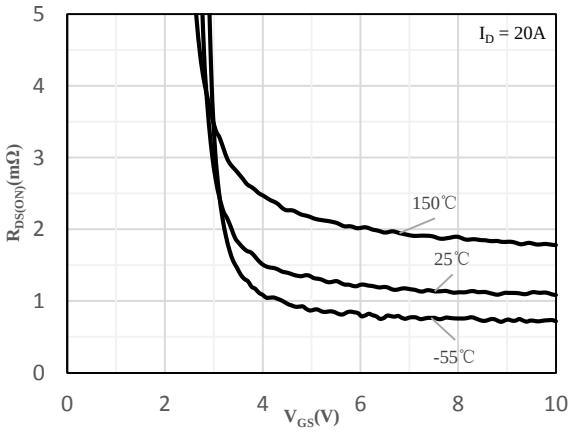


Fig 3 On-Resistance vs. Gate-Source Voltage

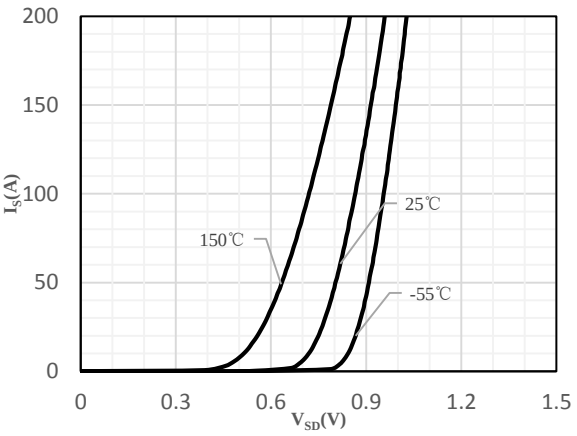


Fig 4 Body-Diode Characteristics

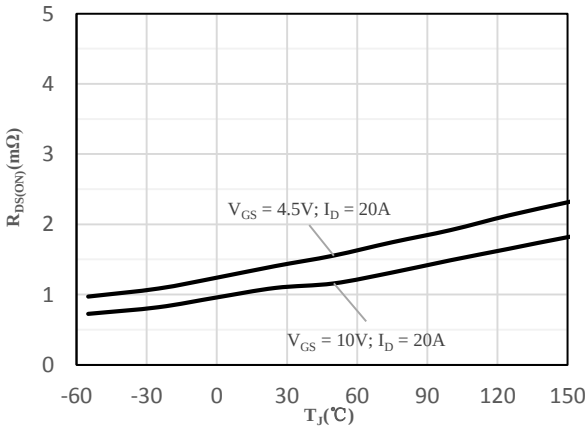


Fig 5 On-Resistance vs. Junction Temperature

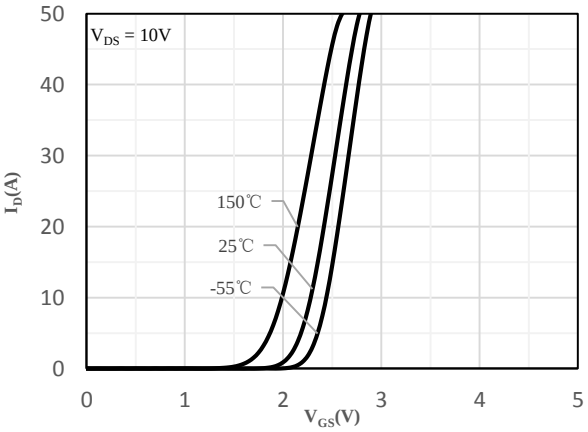


Fig 6 Transfer Characteristics

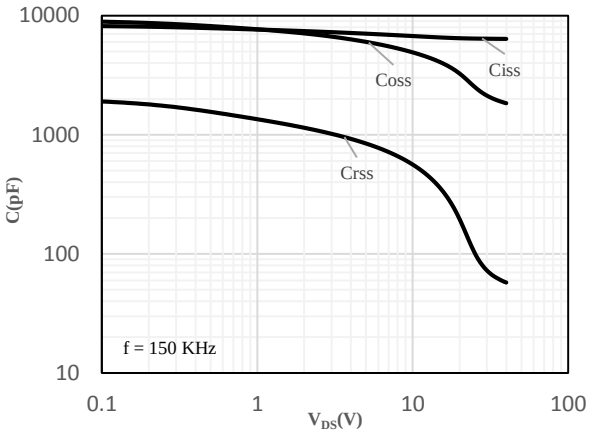


Fig 7 Capacitance Characteristics

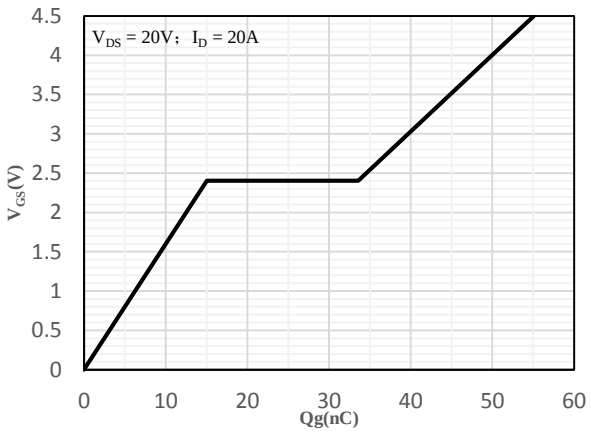


Fig 8 Gate-Charge Characteristics

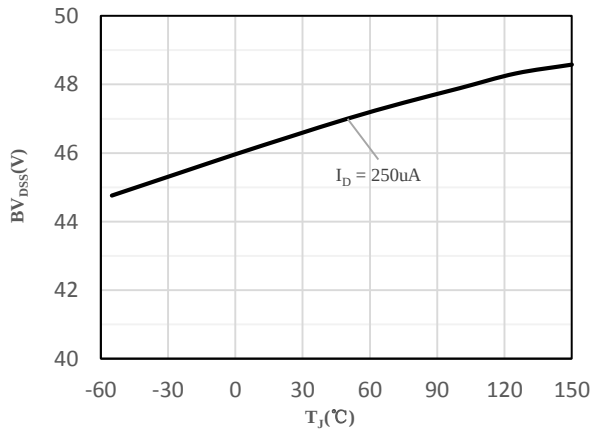


Fig 9 Breakdown Voltage vs. Junction Temperature

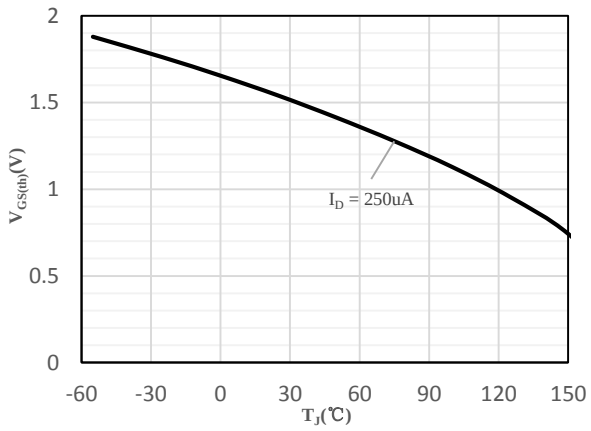
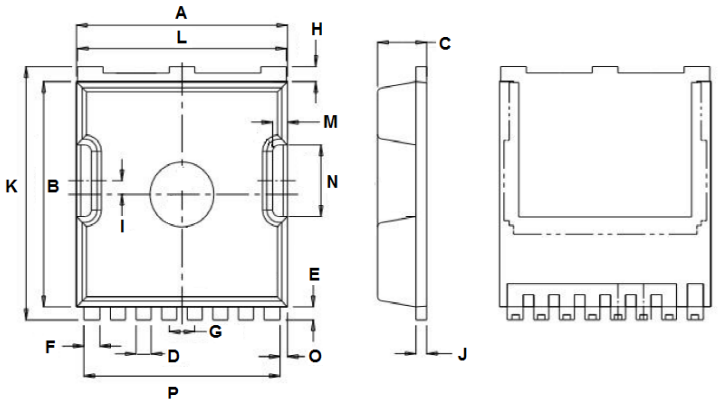


Fig 10 $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



TOLL		
Dimension	**Min.**	**Max.**
A	9.850	9.950
B	10.350	10.450
C	2.250	2.350
D	0.600	0.800
E	0.500	0.700
F	0.650	0.850
G	1.100	1.300
H	0.600	0.800
I	0.580	0.680
J	0.492	0.508
K	11.600	11.800
L	9.750	9.850
M	0.550	0.650
N	3.250	3.350
O	0.250	0.450
P	9.175	9.225

IMPORTANT NOTICE