

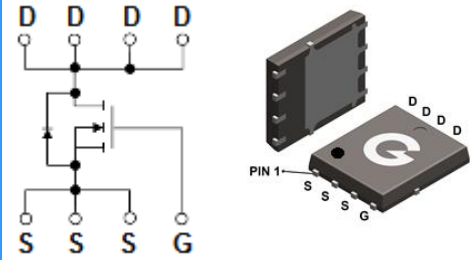
Features

- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF

Mechanical Data

- Case: PDFN5×6-8L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



PDFN5×6-8L

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBL014N04T-5DL8	PDFN5×6-8L	5000 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	80	A
Continuous Drain Current (T _C = 25°C, Silicon Limited) *1		219	A
Continuous Drain Current (T _C = 100°C, Silicon Limited) *1		138	A
Continuous Drain Current (T _A = 25°C, Silicon Limited) *2, 3		35	A
Continuous Drain Current (T _A = 100°C, Silicon Limited) *2, 3		25	A
Pulsed Drain Current (t _p = 10μs) *4	I _{DM}	345	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	114	W
Thermal Resistance Junction-to-Case	R _{θJC}	1.1	°C/W
Thermal Resistance Junction-to-Air *3	R _{θJA}	43.2	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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	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
t _{rr}	Reverse Recovery Time	I _S = 20A, V _{GS} = 0V	-	171	-	ns
Q _{rr}	Reverse Recovery Charge		di/dt = 100A/μs	-	381	-

Notes:

1. Rated according to $R_{\theta JC}$
2. Rated according to $R_{\theta JA}$
3. Surface-mounted on 1 inch² FR-4 board with 2OZ copper
4. Limited by maximum T_J
5. Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 30V$, $V_{GS} = 10V$, $L = 0.1mH$
6. Pulse width limited by maximum T_J

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

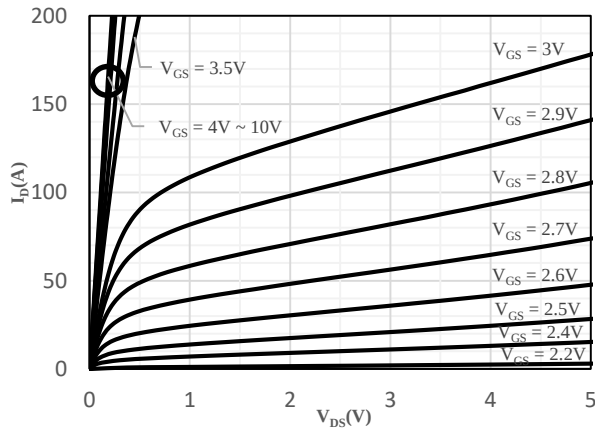


Fig 1 Typical Output Characteristics

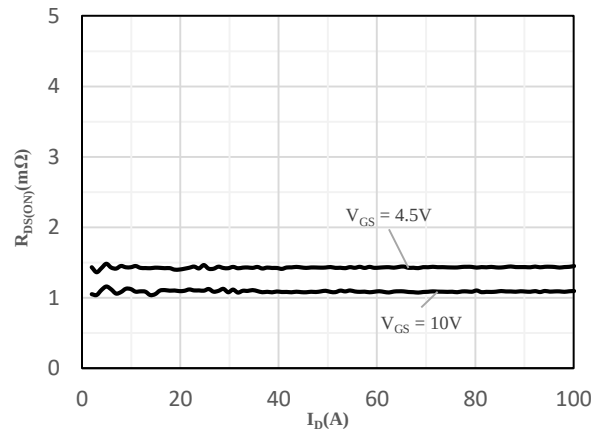


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

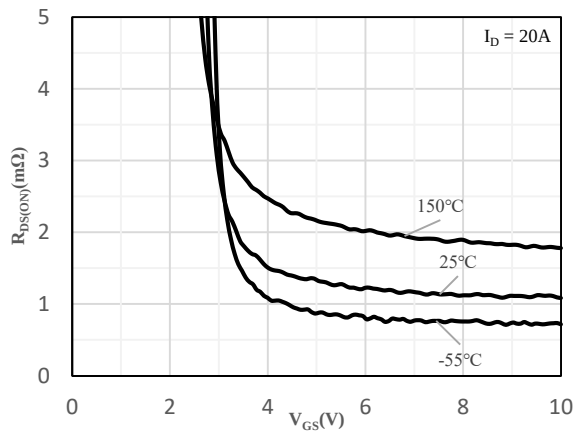


Fig 3 On-Resistance vs. Gate-Source Voltage

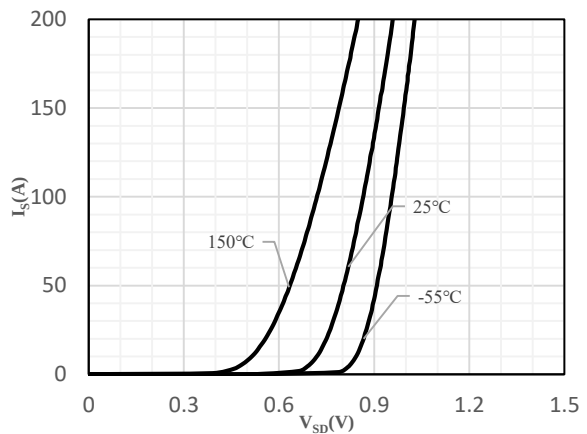


Fig 4 Body-Diode Characteristics

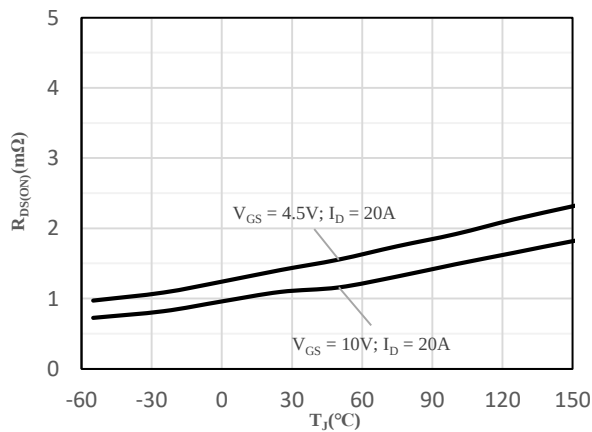


Fig 5 On-Resistance vs. Junction Temperature

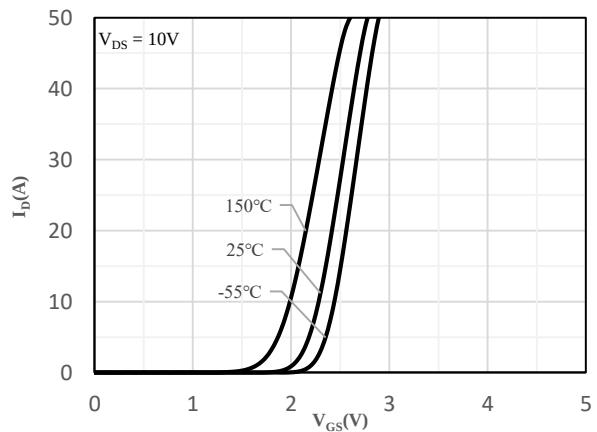


Fig 6 Transfer Characteristics

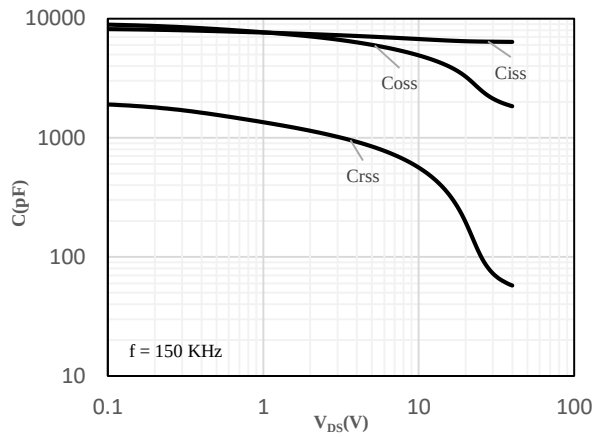


Fig 7 Capacitance Characteristics

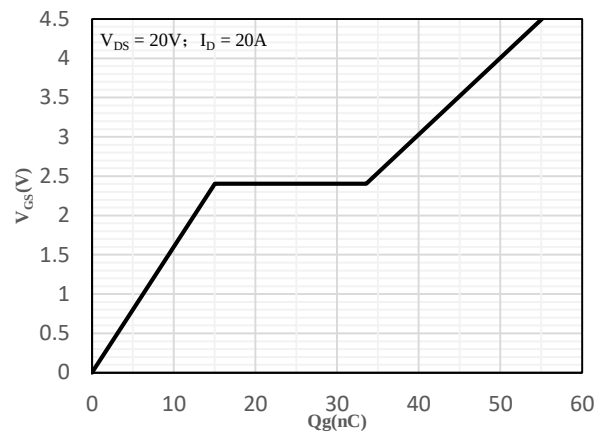


Fig 8 Gate-Charge Characteristics

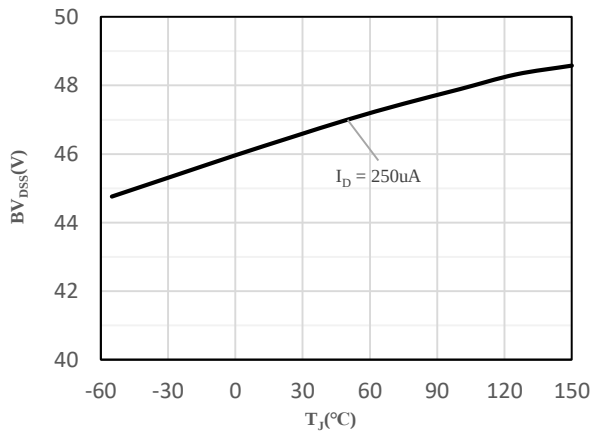


Fig 9 Breakdown Voltage vs.
Junction Temperature

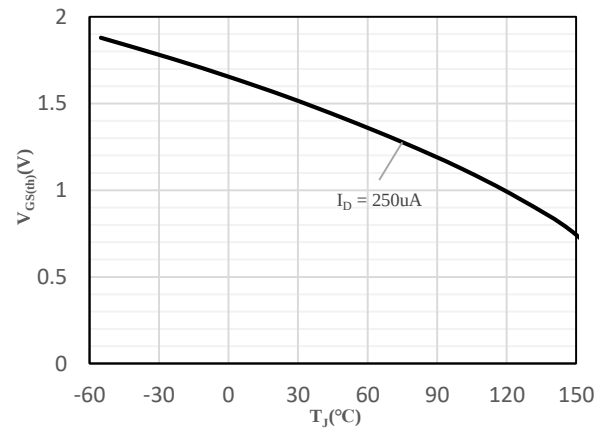


Fig 10 $V_{GS(th)}$ vs. Junction Temperature

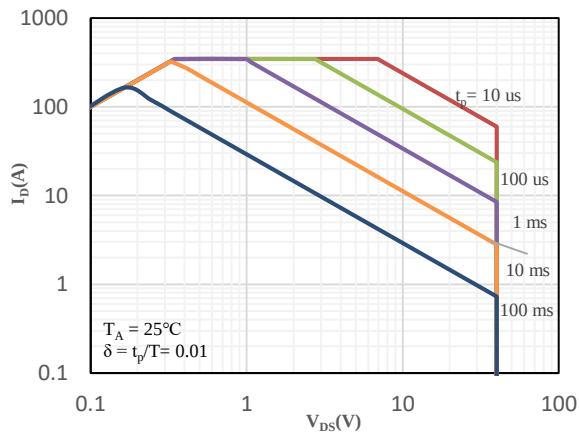


Fig 11 Safe Operation Area

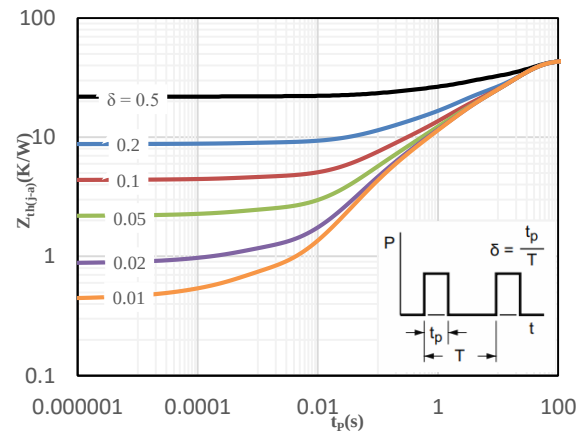


Fig 12 Maximum transient thermal impedance

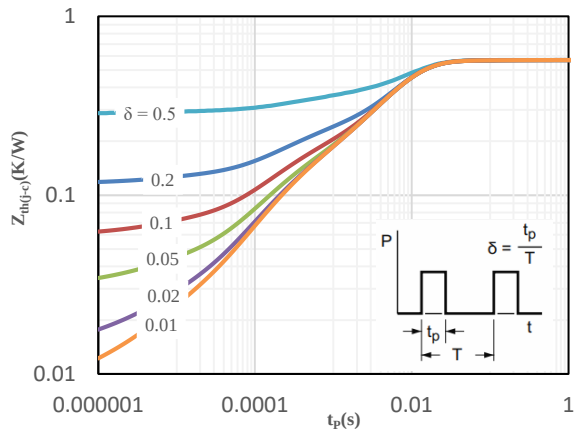
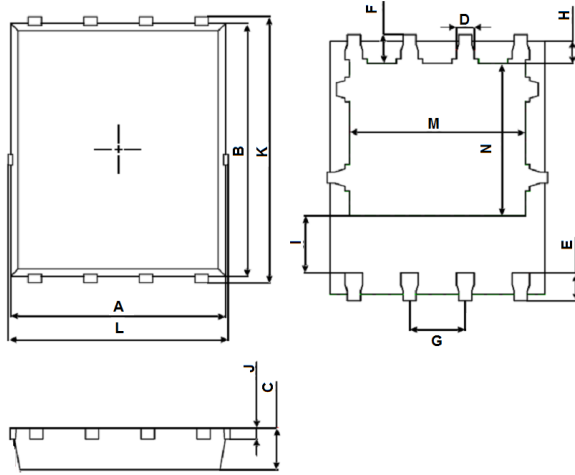


Fig 13 Maximum transient thermal impedance

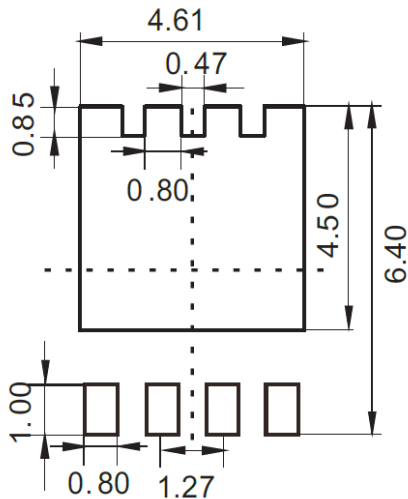
Package Outline Dimensions (Unit: mm)



PDFN5×6-8L		
Dimension	Min.	Max.
A	4.824	4.976
B	5.674	5.826
C	0.900	1.000
D	0.350	0.450
E	0.559	0.711
F	0.574	0.726
G	1.250	1.290
H	0.424	0.576
I	1.190	1.390
J	0.154	0.354
K	5.974	6.126
L	4.944	5.096
M	3.910	4.110
N	3.375	3.575

Mounting Pad Layout (Unit: mm)

PDFN5×6-8L



IMPORTANT NOTICE

Changzhou Galaxy Century Microelectronics (GME) reserves the right to make changes without further notice to any product information (copyrighted) herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.