

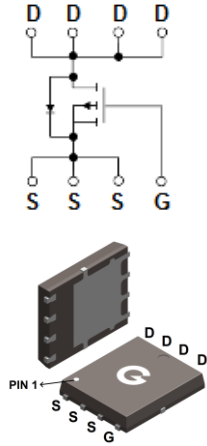
Features

- Super low gate charge
- Green device available
- Excellent C_{dv} / d_t effect decline
- Advanced high cell density trench technology
- JESD22-A114-B ESD rating of class 1A per human body model
- 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
TBL500P10TX-5DL8	PDFN5×6-8L	5000 pcs / Tape & Reel	500P10TX

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ 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	-29	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)		-18	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_C = 25^\circ\text{C}$)	I_{DM}	-116	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	105	mJ
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	83	W
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	-	1.5	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	-	-	45	$^\circ\text{C/W}$

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
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 = -15A	-	-	50	mΩ
		V _{GS} = -4.5V, I _D = -10A	-	-	65	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-1	-2.3	-3	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	12.5	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = -25V f = 1.0MHz	-	1258	-	pF
C _{OSS}	Output Capacitance		-	631	-	
C _{RSS}	Reverse Transfer Capacitance		-	31	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = -50V V _{GS} = -10V R _G = 6Ω R _L = 3.3Ω	-	10.7	-	ns
t _r	Turn-on Rise Time *4		-	56	-	
t _{d(OFF)}	Turn-Off Delay Time *4		-	45	-	
t _f	Turn-Off Fall Time *4		-	81	-	
Q _G	Total Gate-Charge	V _{DD} = -80V V _{GS} = -10V I _D = -15A	-	23.5	-	nC
Q _{GS}	Gate to Source Charge		-	6.4	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	4.6	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = -1A, V _{GS} = 0V, T _J = 25°C	-	-	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} = -15A, V _{GS} = 0V dI/dt = 100A/μs	-	59	-	ns
Q _{rr}	Reverse Recovery Charge		-	120	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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 $V_{DD} = -50V, V_{GS} = -10V, L = 1mH$
4. Guaranteed by design, not subject to production

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

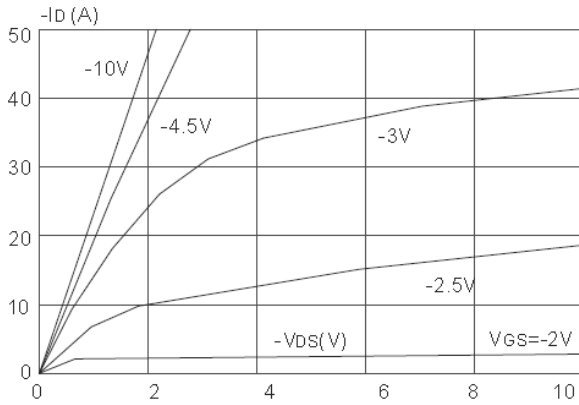


Fig 1 Typical Output Characteristics

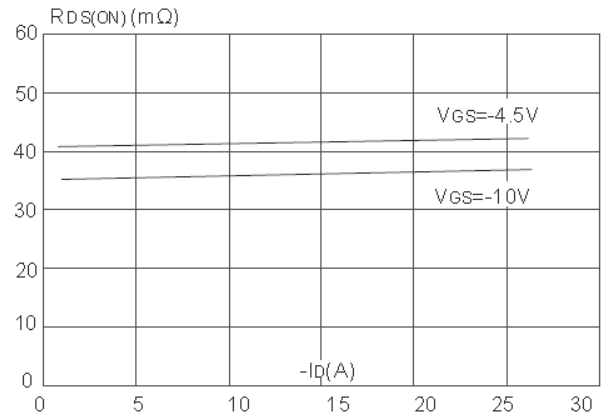


Fig 2 On-Resistance vs. Drain Current
and Gate Voltage

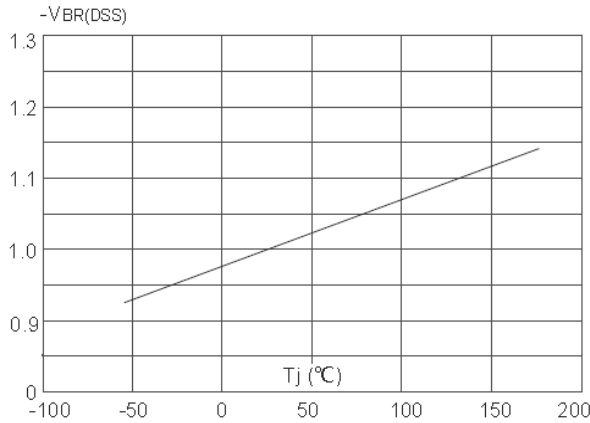


Fig 3 Normalized Breakdown Voltage
vs. Junction Temperature

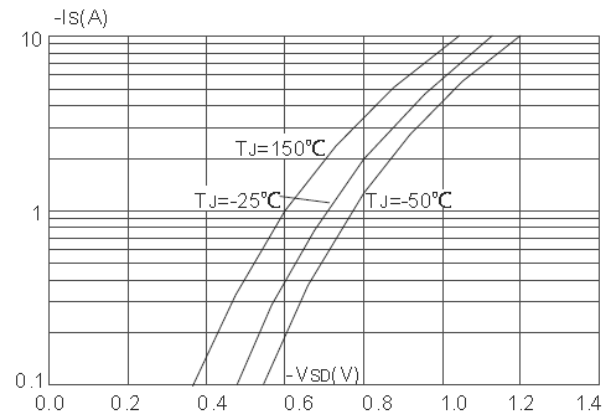


Fig 4 Body-Diode Characteristics

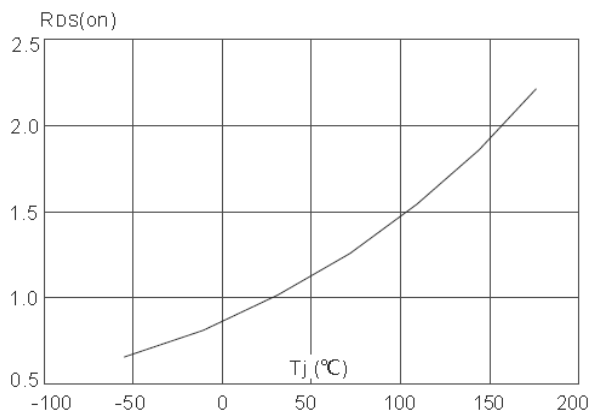


Fig 5 Normalized On-Resistance vs. Junction
Temperature

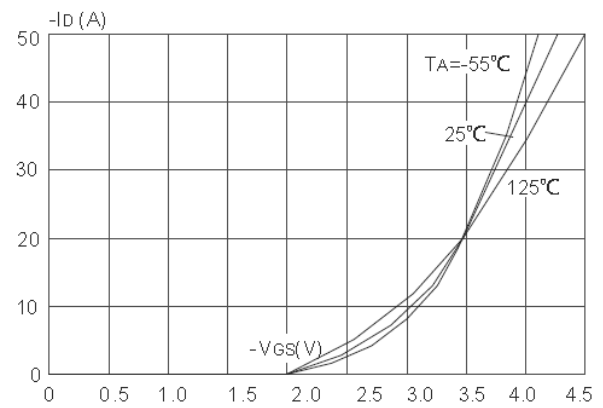


Fig 6 Transfer Characteristics

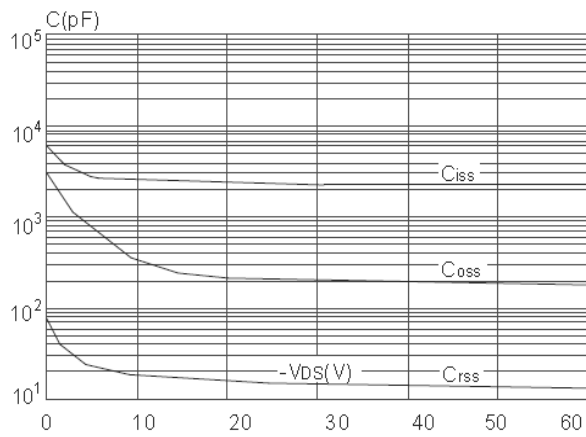


Fig 7 Capacitance Characteristics

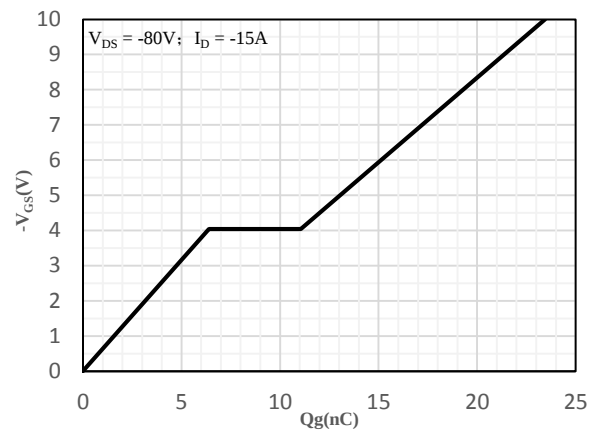
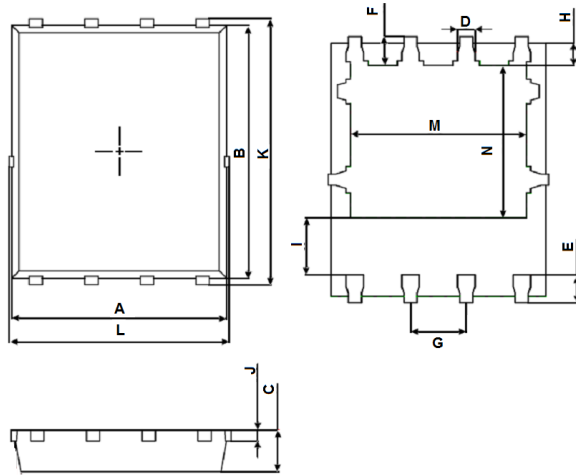


Fig 8 Gate-Charge Characteristics

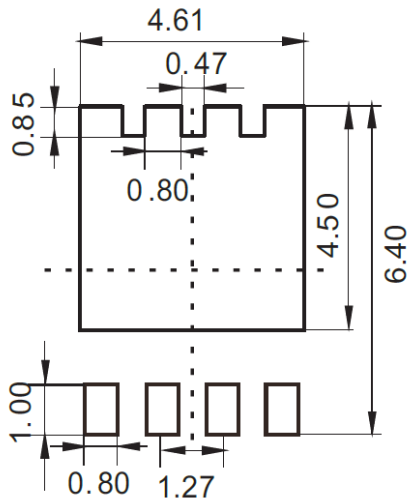
Package Outline Dimensions (Unit: mm)



PDFN5x6-8L		
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)

PDFN5x6-8L



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