

Features

- Reliable and Rugged
- Green device available

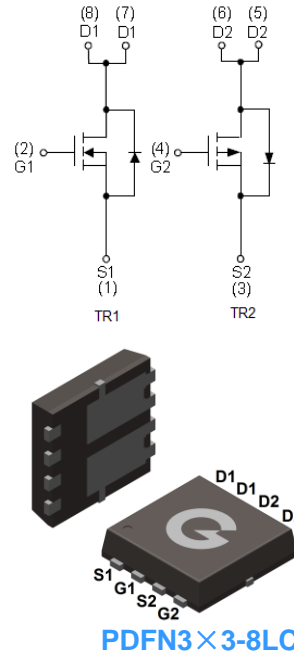
HF

Applications

- Synchronous Rectification
- Motor Control
- Portable equipment application

Mechanical Data

- Case: PDFN3x3-8LC
- 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
GBLH3301-3DL8	PDFN3x3-8LC	5000 pcs / Tape & Reel	GBLH3301

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

Parameter	Symbol	TR1	TR2	Unit
Drain-to-Source Voltage	V _{DSS}	30	-30	V
Gate-to-Source Voltage	V _{GSS}	±20	±20	V
Continuous Drain Current (T _C = 25°C) *4	I _D	11	-13.3	A
Continuous Drain Current (T _C = 100°C) *4		7	-8.4	A
Pulsed Drain Current (T _C = 25°C) *1	I _{DM}	44	-53	A
Diode Continuous Forward Current(T _C = 25°C)	I _S	5.5	-6.6	A
Single Pulse Avalanche Energy *3	E _{AS}	7.3	20	mJ

Thermal Characteristics

Parameter	Symbol	TR1	TR2	Unit
Power Dissipation (T _C = 25°C)	P _D	6.25	10.4	W
Thermal Resistance Junction-to-Air *2	R _{θJA}	100	100	°C/W
Thermal Resistance Junction-to-Case	R _{θJC}	20	12	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150		°C
Storage Temperature Range	T _{STG}	-55 ~ +150		°C

Electrical Characteristics-TR1 (@ T_A = 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	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 24V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 24V, V _{GS} = 0V, T _J = 85°C	-	-	30	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 *5	V _{GS} = 10V, I _D = 6.3A	-	-	30	mΩ
		V _{GS} = 4.5V, I _D = 4.8A	-	-	45	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	-	2.5	V
Dynamic Characteristics *6						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz	-	515	-	pF
C _{OSS}	Output Capacitance					
C _{RSS}	Reverse Transfer Capacitance					
Switching Characteristics *6						
t _{d(ON)}	Turn-on Delay Time	V _{GS} = 10V V _{DD} = 15V R _L = 2.6Ω R _G = 3Ω	-	4.5	-	ns
t _r	Turn-on Rise Time					
t _{d(OFF)}	Turn-Off Delay Time					
t _f	Turn-Off Fall Time					
Q _G	Total Gate-Charge	V _{DD} = 15V V _{GS} = 10V I _D = 5.8A	-	14.4	-	nC
Q _{GS}	Gate to Source Charge					
Q _{GD}	Gate to Drain (Miller) Charge					
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *5	I _{SD} = 1A, V _{GS} = 0V, T _J = 25°C	-	-	1.1	V

Notes:

- Pulse width limited by max. junction temperature
- R_{θJA} steady state t=999s. R_{θJA} is measured with the device mounted on 1in², FR-4 board with 2oz. Copper
- The E_{AS} data shows Max. rating. The test condition is L = 0.5mH
- t < 10s
- Pulse test ; pulse width ≤ 300μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

Electrical Characteristics-TR2 (@ T_A = 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	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -24V, V _{GS} = 0V, T _J = 25°C	-	-	-1	μA
		V _{DS} = -24V, V _{GS} = 0V, T _J = 85°C	-	-	-30	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 *5	V _{GS} = -10V, I _D = -4.1A	-	40	46	mΩ
		V _{GS} = -4.5V, I _D = -3A	-	55	65	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-1	-	-2.5	V
Dynamic Characteristics *6						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = -15V f = 1.0MHz	-	565	-	pF
C _{OSS}	Output Capacitance		-	89	-	
C _{RSS}	Reverse Transfer Capacitance		-	77	-	
Switching Characteristics						
Q _G	Total Gate-Charge	V _{DD} = -15V V _{GS} = -4.5V I _D = -4A	-	7.2	-	nC
Q _{GS}	Gate to Source Charge		-	1.5	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	2.8	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *5	I _{SD} = -1A, V _{GS} = 0V, T _J = 25°C	-	-	-1	V

Ratings and Characteristics Curves-TR1 (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

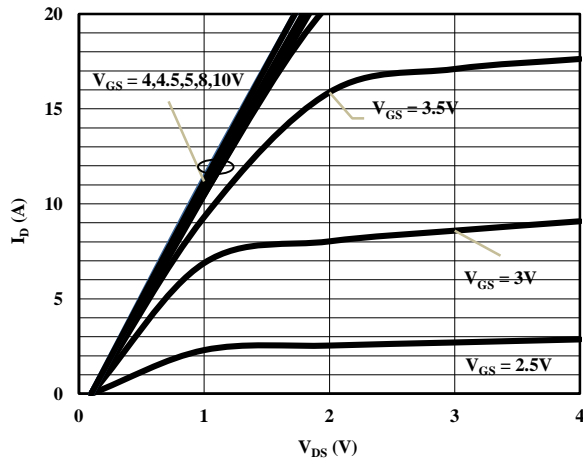


Fig 1 On-Region Characteristics

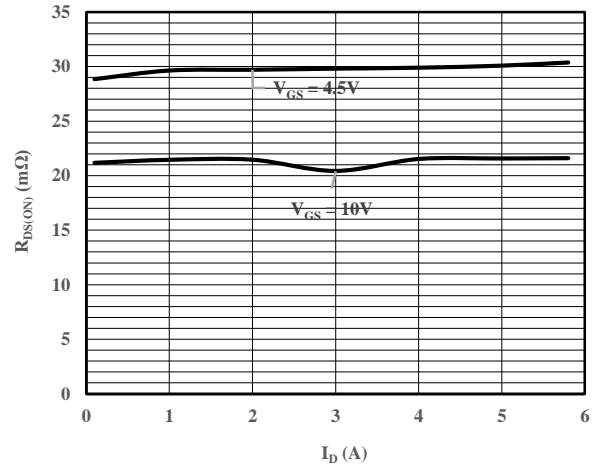


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

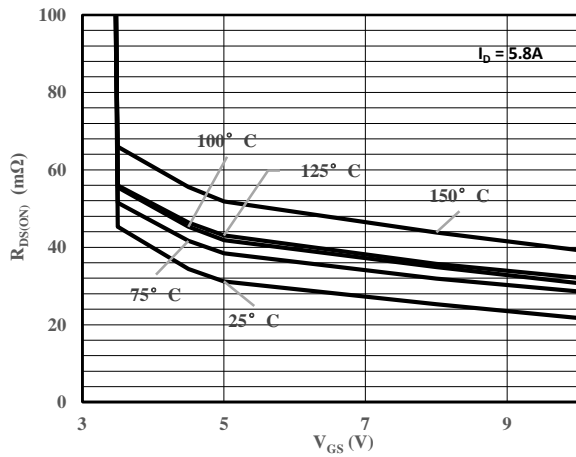


Fig 3 On-Resistance vs. Gate-Source Voltage

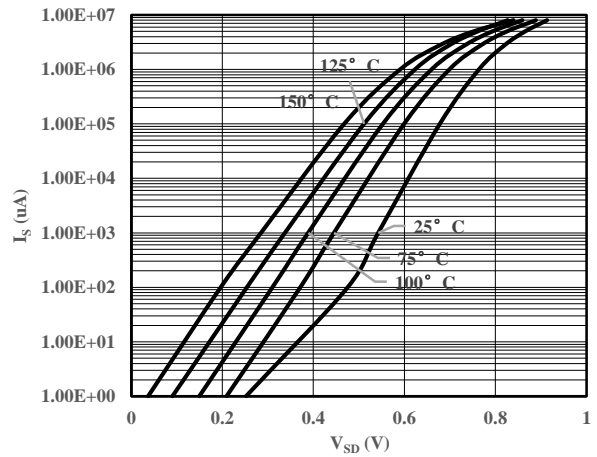


Fig 4 Body-Diode Characteristics

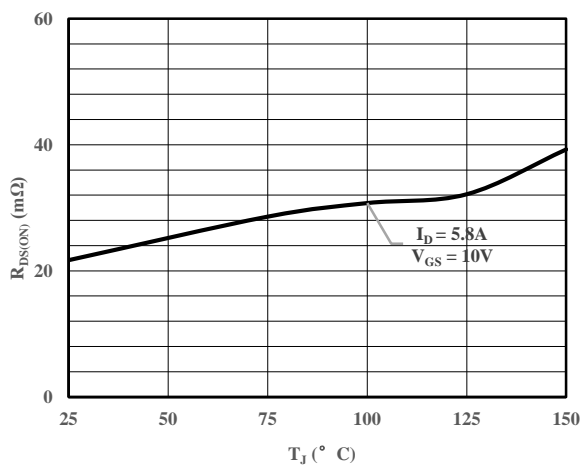


Fig 5 On-Resistance vs. Junction Temperature

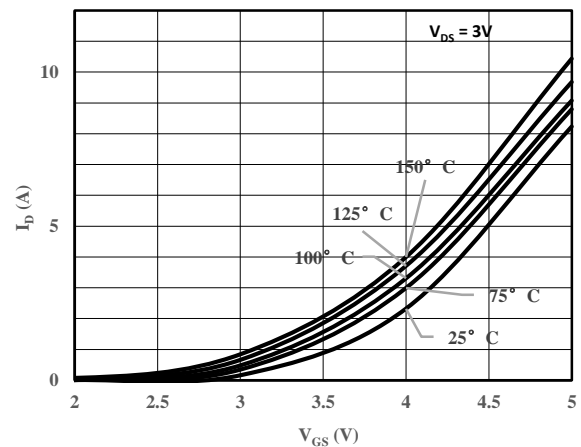


Fig 6 Transfer Characteristics

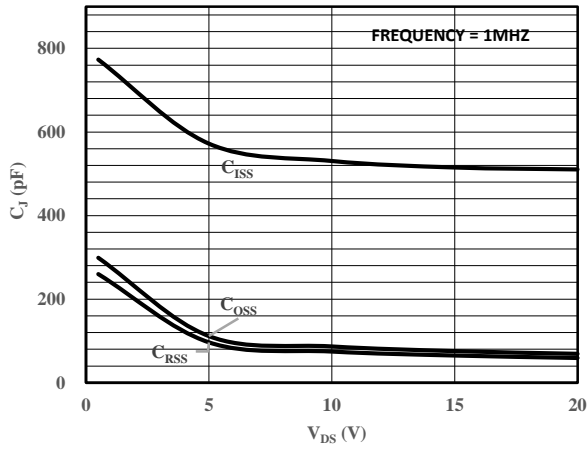


Fig 7 Capacitance Characteristics

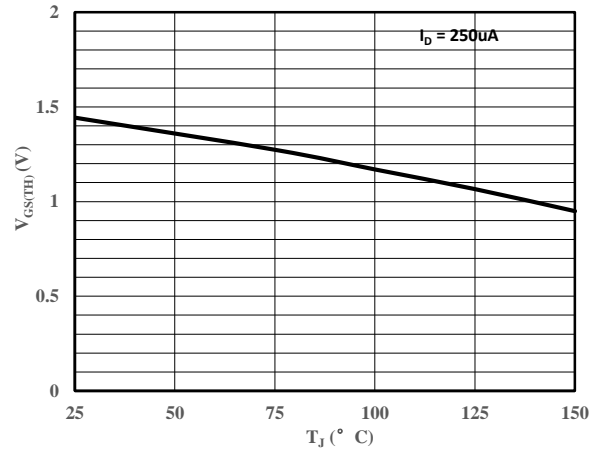


Fig 8 Gate Voltage vs. Junction Temperature

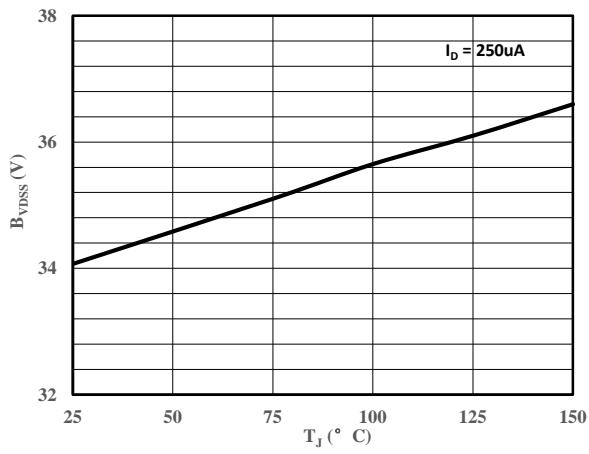


Fig 9 Drain-Source vs. Junction Temperature

Ratings and Characteristics Curves-TR2 (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

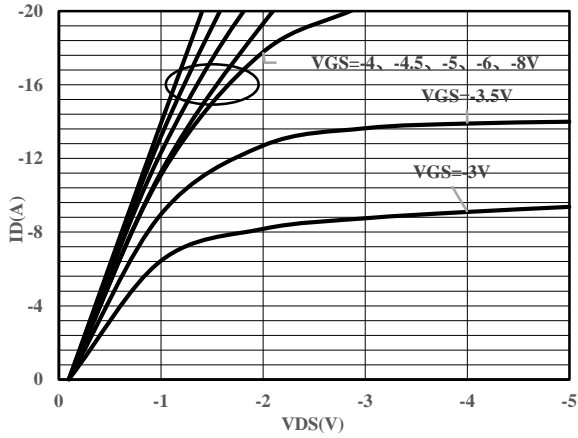


Fig.1- On-Region Characteristics

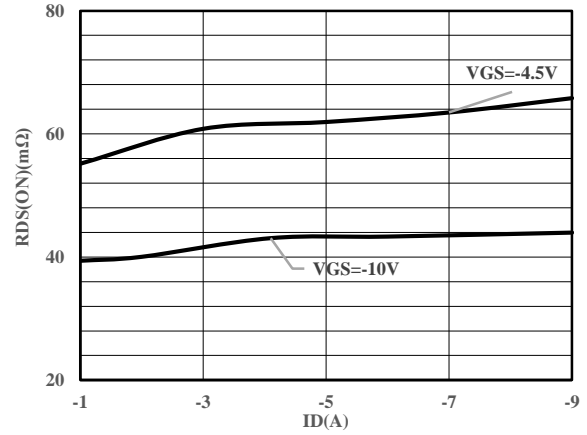


Fig.2-On-Resistance vs. Drain Current and Gate Voltage

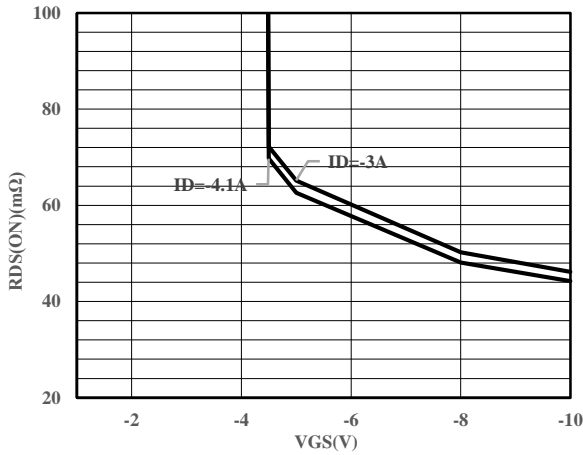


Fig.3-On-Resistance vs. Gate-Source Voltage

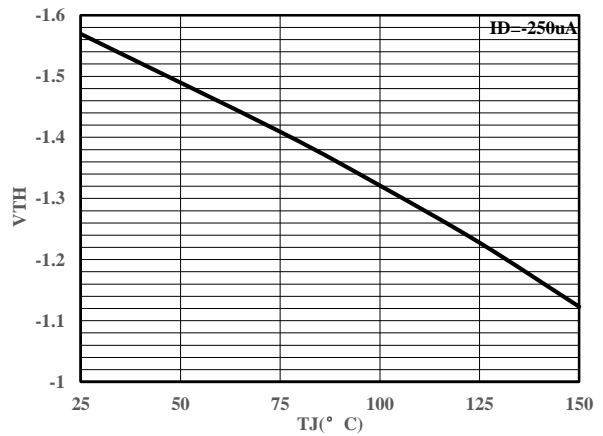


Fig.4- Gate Voltage vs. Junction Temperature

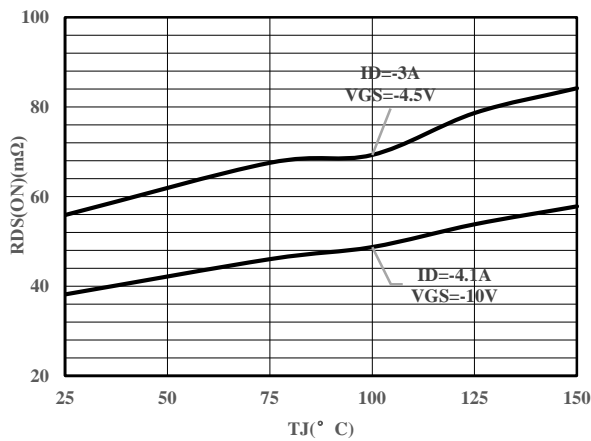


Fig.5-On-Resistance vs. Junction Temperature

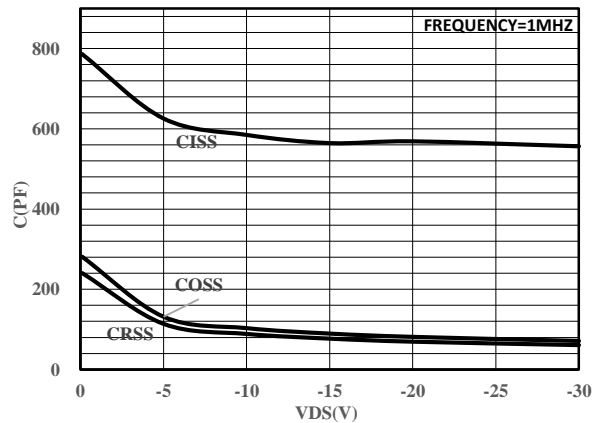
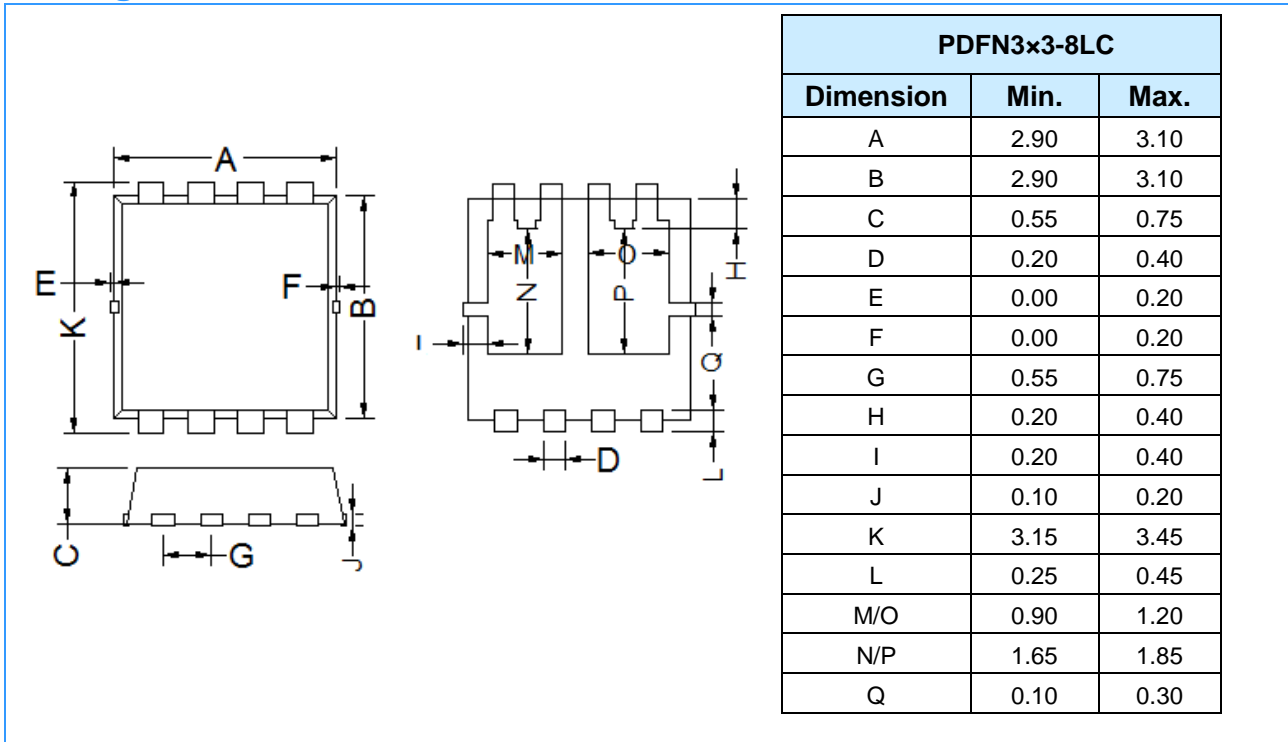
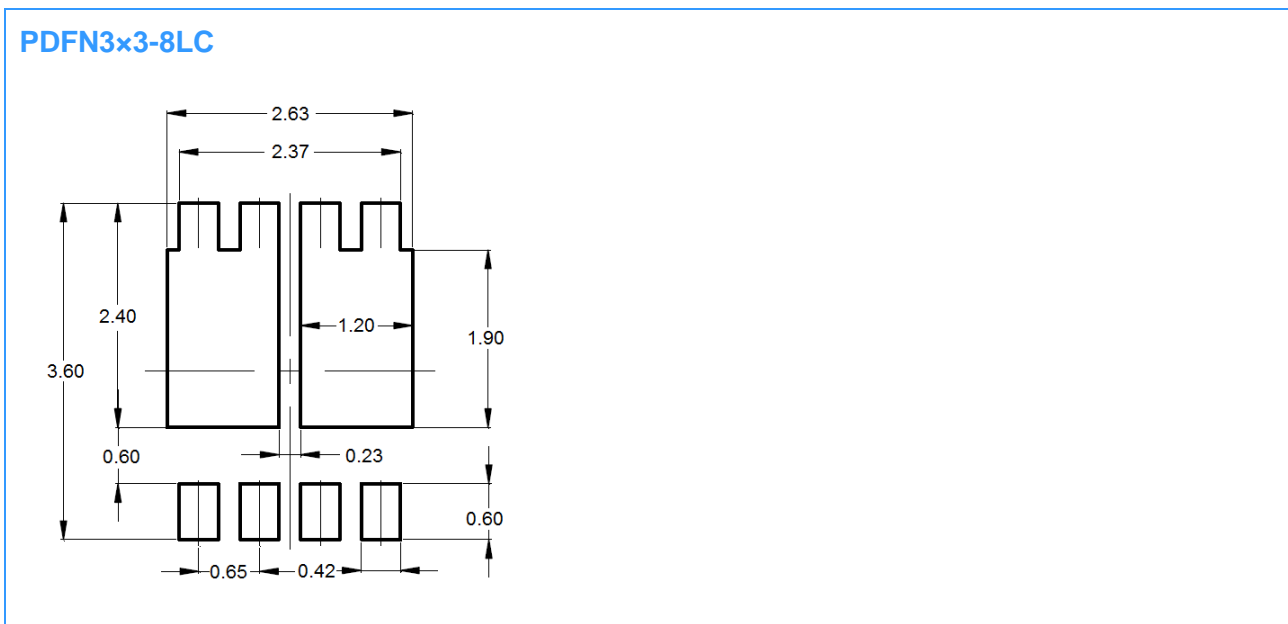


Fig.7-Capacitance Characteristics

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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