

N-Channel Enhancement Mode MOSFET (30V,40A)

PRODUCT SUMMARY

V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Max
30V	40A	5.5@ $V_{GS} = 10V, I_D = 20A$
		9@ $V_{GS} = 4.5V, I_D = 10A$

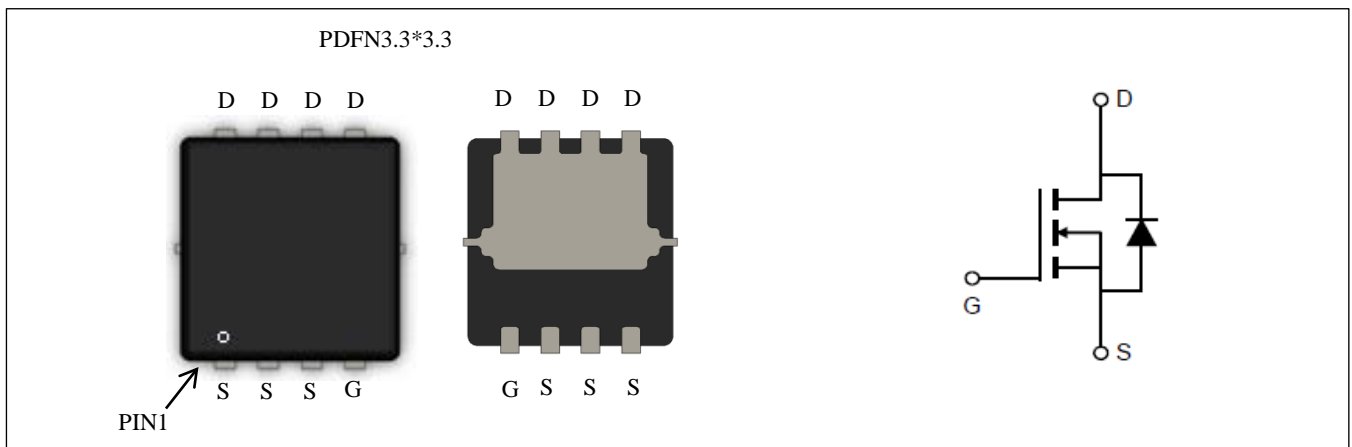
Features

- Latest Trench Power MOSFET Technology
- Low Gate Charge
- Low $R_{DS(on)}$ For High Frequency Switching and Reduced Switching Losses.
- High Current Capability

General Description

- Case: PDFN 3.3X3.3-8L
- Case Material: Molded Plastic. UL Flammability
- Moisture Sensitivity: Level 1 per
- RoHS and Halogen-Free Compliant

RoHS+HF



Absolute Maximum Ratings

Symbol	Parameter	Ratings	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current (Continuous) ^a @ $T_C=25^\circ C$	40	A
I_D	Drain Current (Continuous) ^a @ $T_C=100^\circ C$	20	A
I_{DM}	Drain Current (Pulsed) ^b	140	A
E_{AS}	Single Pulse Avalanche Energy $L=0.1mH$ ^c	115.2	mJ
I_{AS}	Single Pulse Avalanche Current	48	A
P_D	Total Power Dissipation ^d @ $T_A = 25^\circ C$	2	W
P_D	Total Power Dissipation ^d @ $T_C = 25^\circ C$	59	W
T_J, T_{STG}	Storage Junction and Operating Temperature Range	- 55 to +150	$^\circ C$
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State) ^a	62	$^\circ C/W$

Electrical Characteristics (T_j=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
•Off Characteristics						
BV _{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	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ± 20V, V _{DS} = 0V	-	-	±100	nA
•On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.2	-	2.5	V
R _{DS(on)}	Static Drain-Source On-Resistance ^b	V _{GS} = 10V, I _D = 20A	-	4.8	5.5	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	6.5	9	
g _{FS}	Forward Transconductance	V _{DS} = 5V, I _D = 30A	-	43	-	S
•Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz	-	2295	-	pF
C _{oss}	Output Capacitance		-	267	-	
C _{rss}	Reverse Transfer Capacitance		-	210	-	
•Switching Characteristics						
Q _g	Total Gate Charge(4.5)	V _{DS} =15V, V _{GS} =10V, R _G =3.3Ω, I _D =15A	-	20	-	nC
Q _{gs}	Gate-Source Charge		-	7.6	-	
Q _{gd}	Gate-Drain Charge		-	3.5	-	
t _{d(on)}	Turn-on Delay Time	V _{GS} = 10V, V _{DS} =15V, R _G = 3.3Ω, I _D = 15A	-	7.8	-	nS
t _r	Turn-on Rise Time		-	15	-	
t _{d(off)}	Turn-off Delay Time		-	37.3	-	
t _f	Turn-off Fall Time		-	10.6	-	
•Diode Characteristics						
T _{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs, T _j =25°C	-	14	-	nS
Q _{rr}	Body Diode Reverse Recovery Charge		-	5	-	nC
I _S	Continuous Source Current ^a	V _G =V _D =0V, Force Current	-	-	40	A
I _{SM}	Pulsed Source Current ^b		-	-	140	A
V _{SD}	Diode Forward Voltage ^b	V _{GS} =0V, I _S =1A, T _j =25°C	-	-	1	V

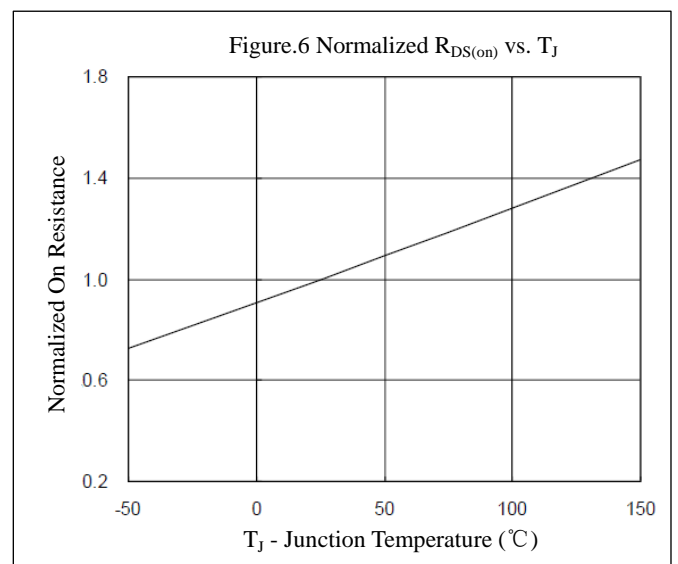
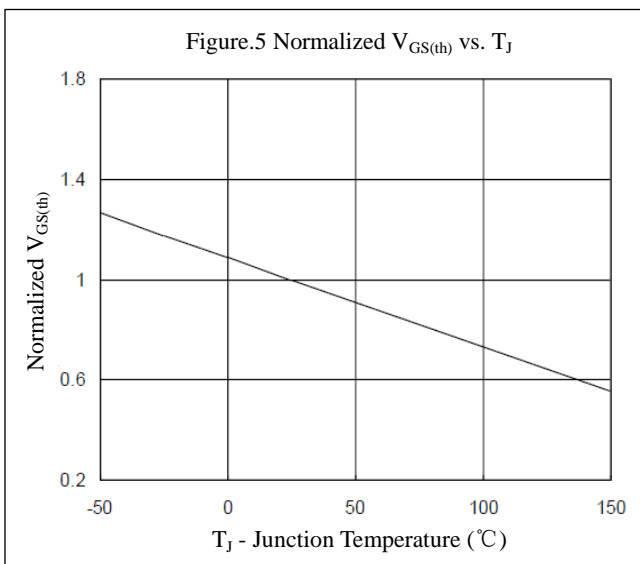
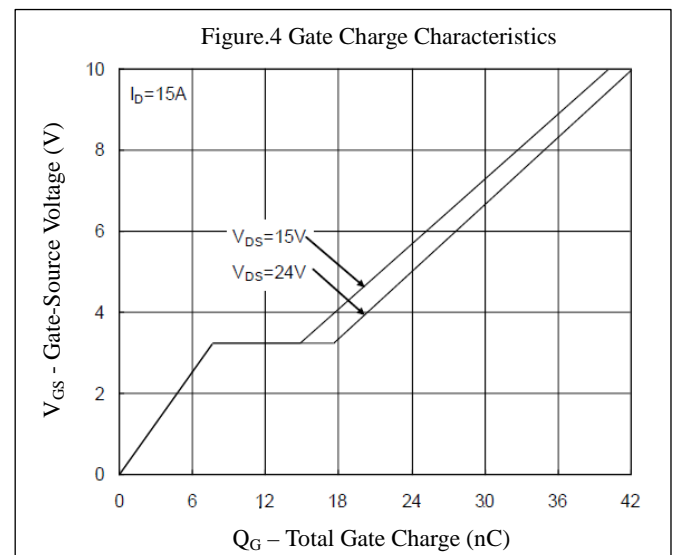
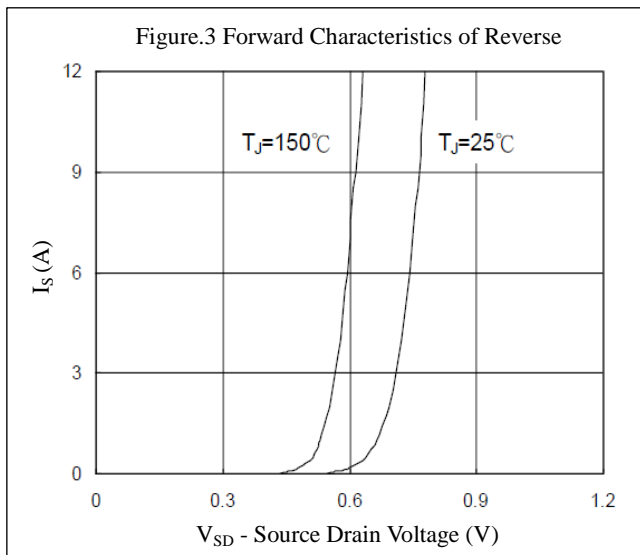
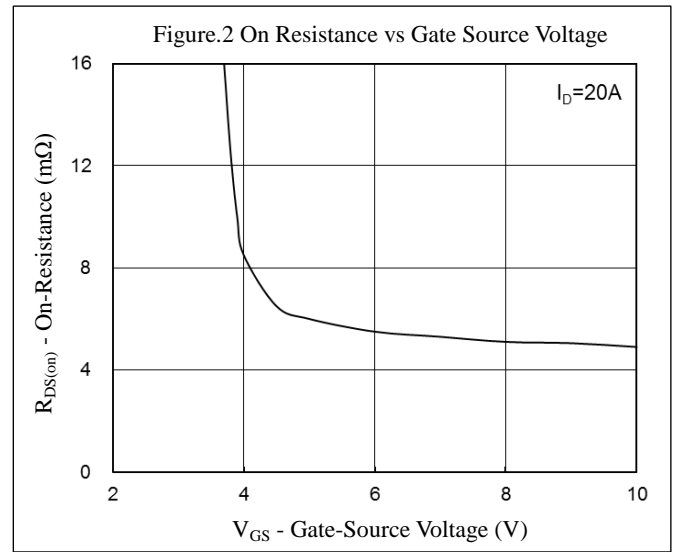
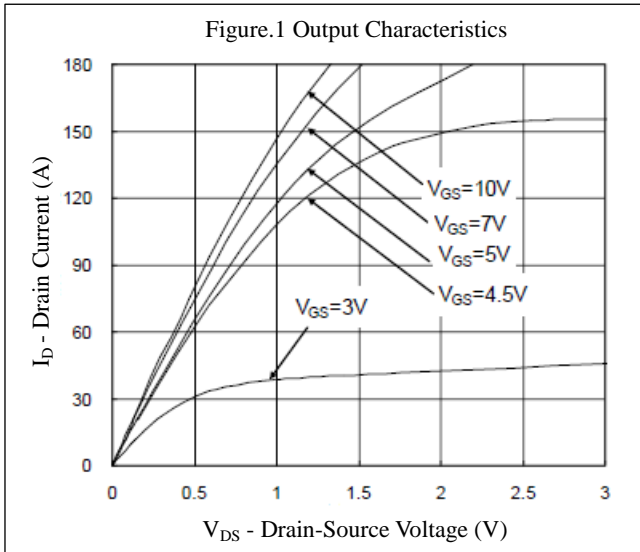
Note :a. The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z copper.

b. The data tested by pulsed, pulse width ≤300μs, duty cycle ≤2%

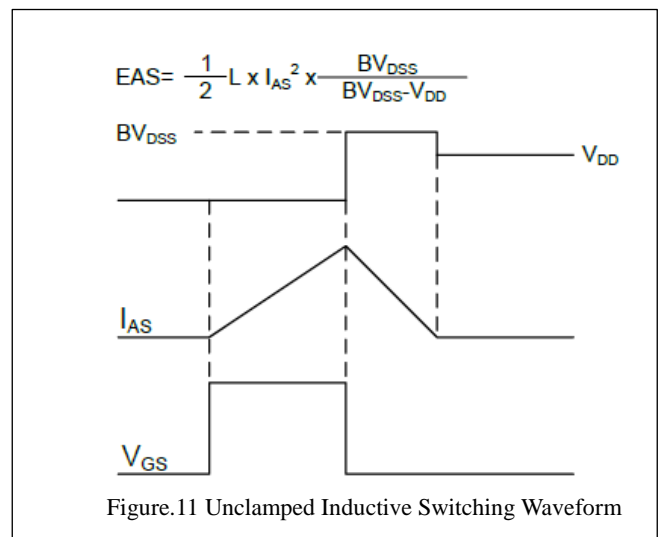
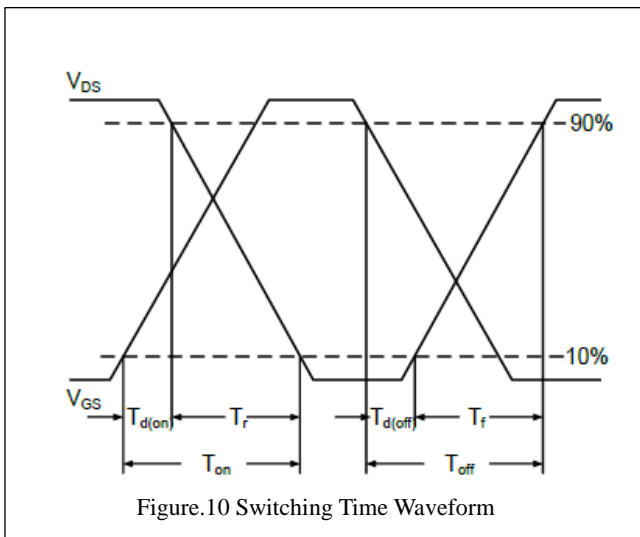
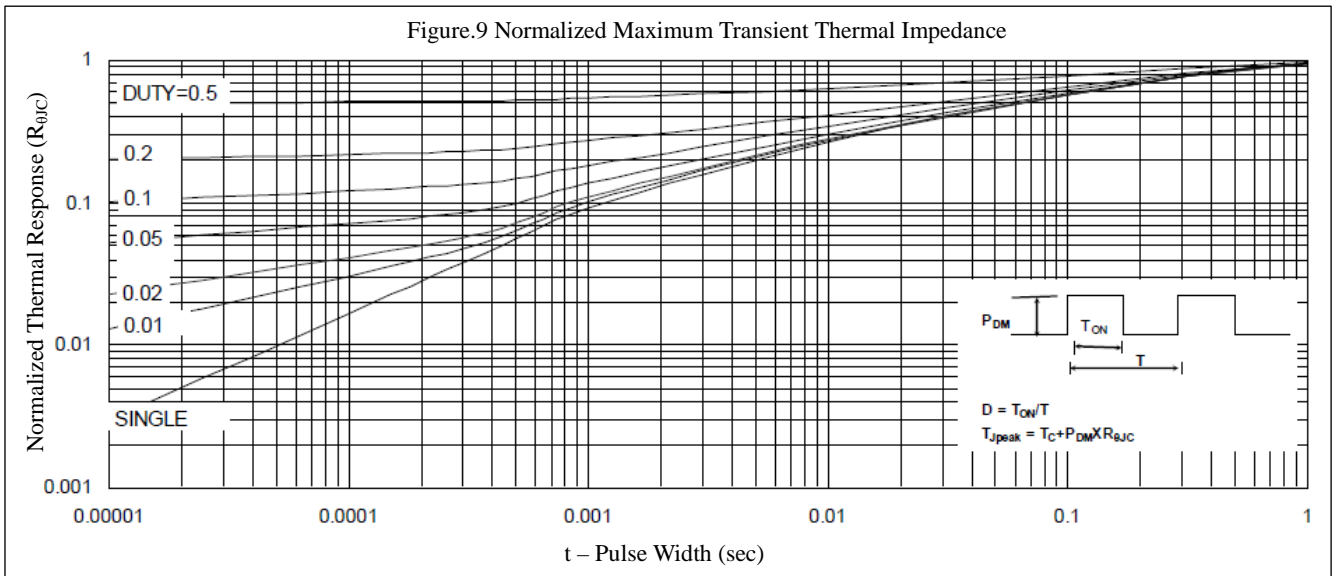
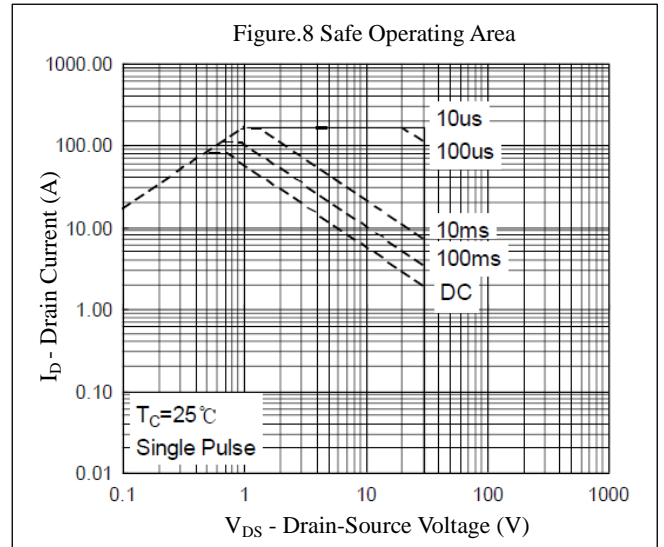
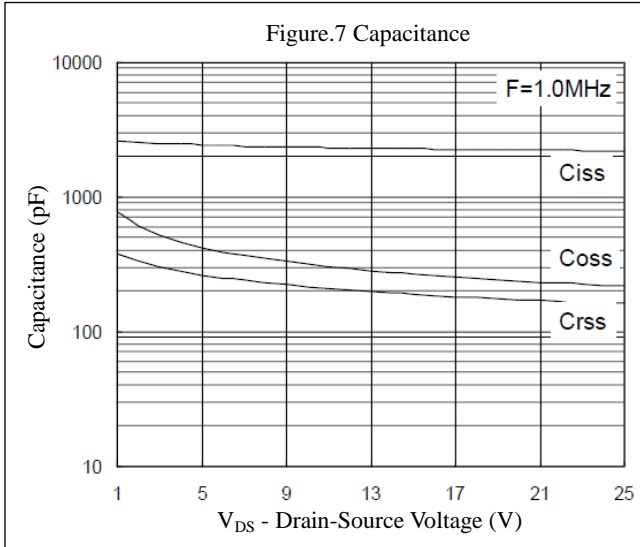
c. The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=48A

d. The power dissipation is limited by 150°C junction temperature

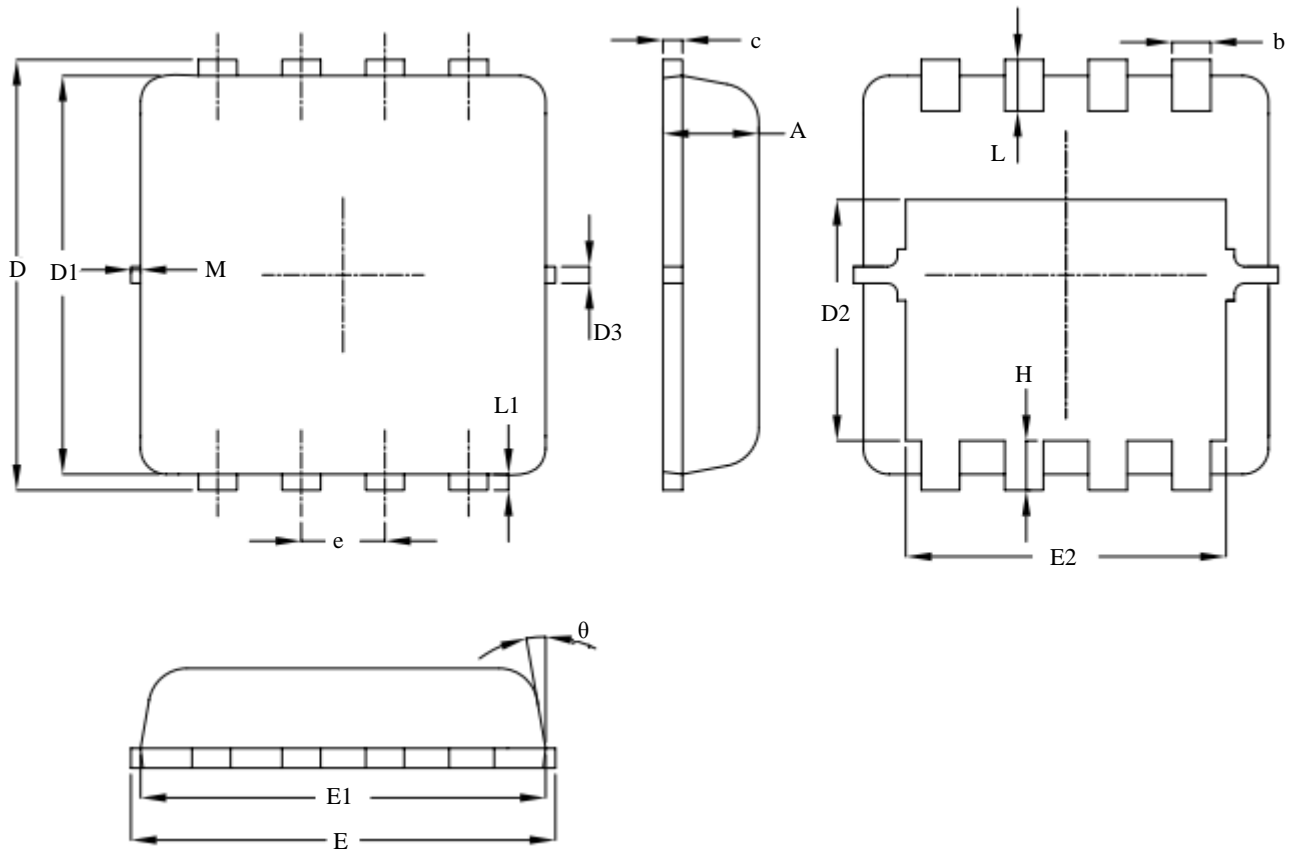
Characteristics Curve



Characteristics Curve



PDFN3.3*3.3-8L PACKAGE OUTLINE DIMENSIONS



Symbol	MM			INCH		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
b	0.25	0.30	0.35	0.010	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	3.25	3.35	3.45	0.128	0.132	0.136
D1	3.00	3.10	3.20	0.118	0.122	0.126
D2	1.78	1.88	1.98	0.070	0.074	0.078
D3	-	0.13	-	-	0.005	-
E	3.20	3.30	3.40	0.126	0.130	0.134
E1	3.00	3.15	3.20	0.118	0.124	0.126
E2	2.39	2.49	2.59	0.094	0.098	0.102
e	0.65BSC			0.026BSC		
H	0.30	0.39	0.50	0.012	0.015	0.020
L	0.30	0.40	0.50	0.012	0.016	0.020
L1	-	0.13	-	-	0.005	-
θ	-	10°	12°	-	10°	12°
M	-	-	0.15	-	-	0.006



Notice

1. Specification of the products displayed herein is subject to change without notice. Continuous development may necessitate changes in technical data without notice. GEMMICRO or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies.
2. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.