Shenzhen Tuofeng Semiconductor Technology Co., Ltd

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

SGT MOS、低内阻、低结电容开关损耗小

TF060N10NG

● General Description

The TF060N10NG uses advanced trench technology and design to provide excellent RDS(ON) with lowgate charge. It can be used in a wide variety ofapplications.

● Features

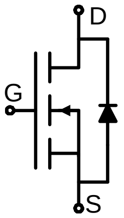
- Advance device constructure
- Low $R_{DS(ON)}$ to minimize conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance

●Application

Synchronous Rectification for AC-DC/DC-DC converter

Power Tools

● Product Summary

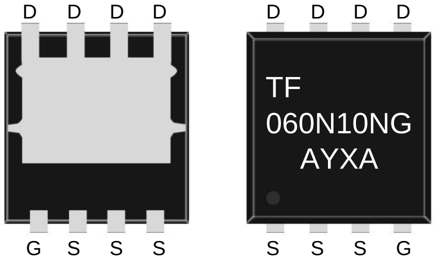


V_{DS} =100V I_D=82A

$R_{DSON(10V\ typ)}$ =5.9mΩ

$R_{DSON(4.5V\ typ)}$ =7.6mΩ

RoHS compliant



PDFN5x6-8L

●Package Marking and Ordering Information:

Part NO.	TF060N10NG
Marking1	060N10NG
Marking2	TF:tuofeng; AA:device code; Y:year code; X:Week
Basic ordering unit	5000 / PCS

●Absolute Maximum Ratings (T$_C$ =25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@}$TC=25℃	82	A
	$I_{D@}$TC=75℃	57	A
	$I_{D@}$TC=100℃	49	A
Pulsed Drain Current ①	I_{DM}	328	A
Total Power Dissipation	P_D@TC=25℃	108	W
Total Power Dissipation	P_D@TA=25℃	2.0	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	245	mJ

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	4.8	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	50	°C/W
Soldering temperature, wavesoldering for 8 s	T_{sold}	-	-	265	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V,I_D =250uA	100	-	-	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1.2	1.7	2.3	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100 V_{GS} =0V	-	-	1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±20V ,V_{DS} =0V	-	-	±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	5.9	8.0	mΩ
		V_{GS}=4.5V, I_D=15A	-	7.6	9.5	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=20A	-	18	-	S
Source-drain voltage	V_{SD}	Is=20A	-	-	1.20	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz V_{DS}=50V	-	1585	-	pF
Output capacitance	Coss		-	693	-	
Reverse transfer capacitance	Crss		-	13	-	

●Gate Charge characteristics(Ta = 25℃)

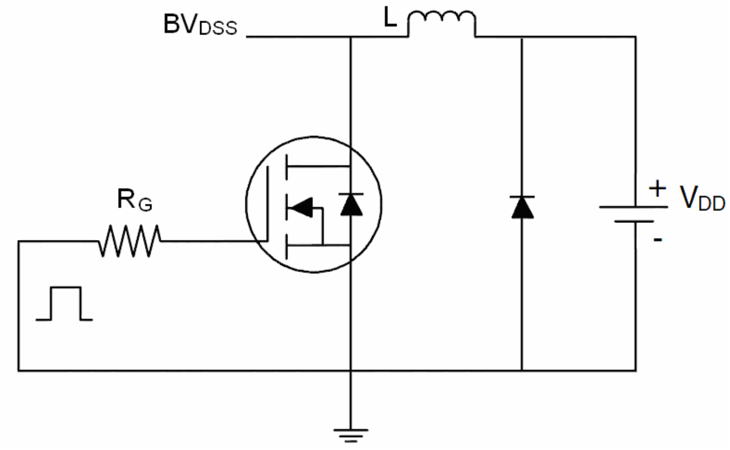
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} = 50V I_D = 20A V_{GS} = 10V	-	27.0	-	nC
Gate - Source charge	Qgs		-	13.2	-	
Gate - Drain charge	Qgd		-	5.3	-	

●Switching Characteristics

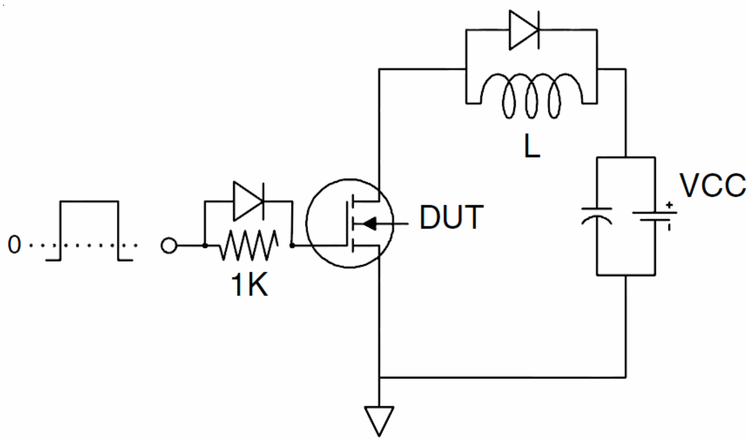
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Turn-on delay time	td(on)	V_{DD} = 50V I_D = 20A R_G =3.0Ω V_{GS} = 10V	-	4.6	-	nS
Rise time	tr		-	10	-	
Turn-off delay time	td(off)		-	23	-	
Fall time	tf		-	21	-	

Test Circuit

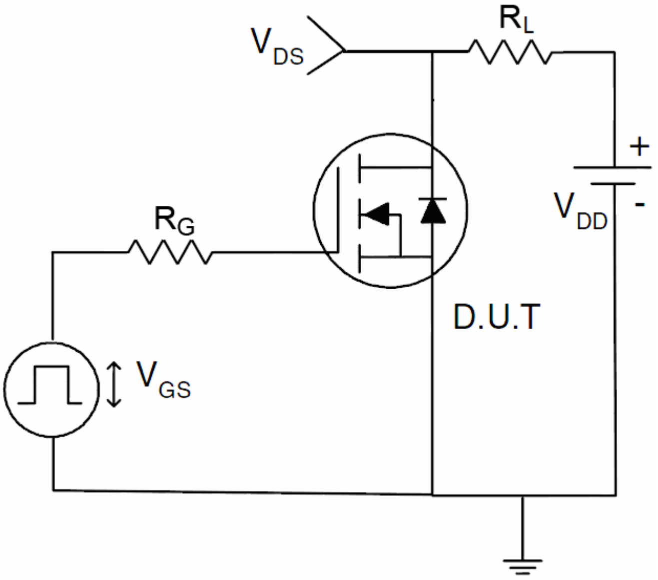
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



Typical Performance Characteristics

Fig 1: Output Characteristics

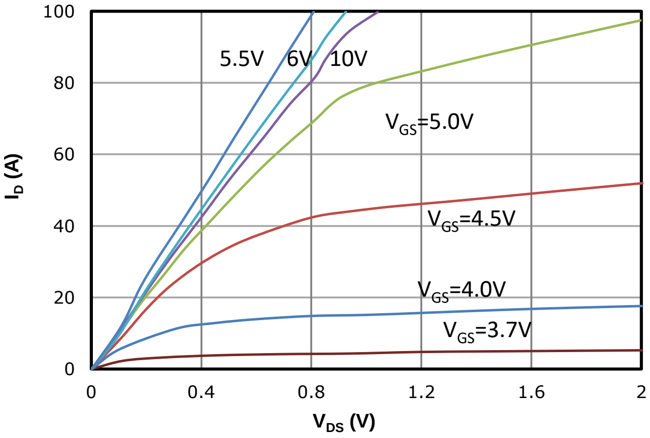


Fig 2: Transfer Characteristics

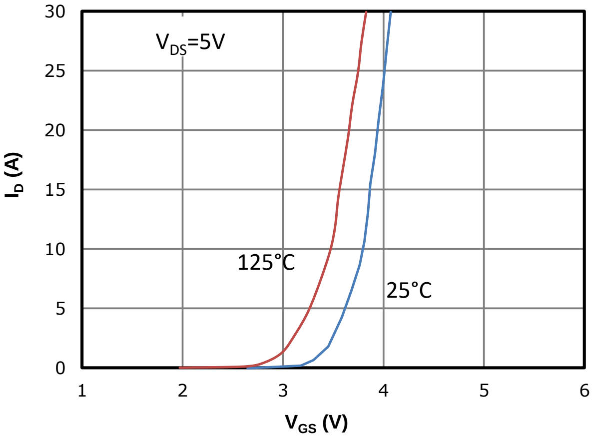


Fig 3: Rds(on) vs Drain Current and Gate Voltage

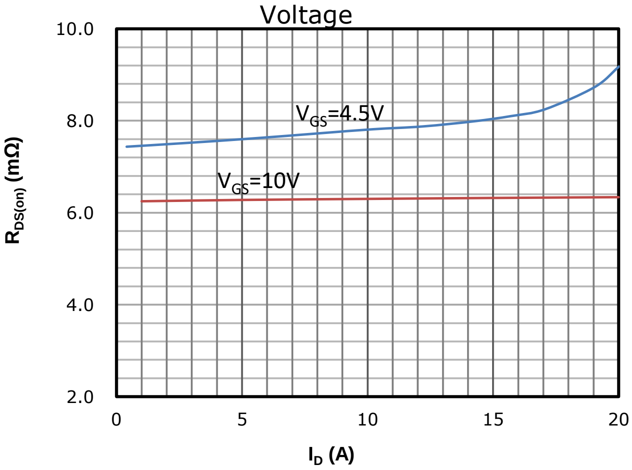


Fig 4: Rds(on) vs Gate Voltage

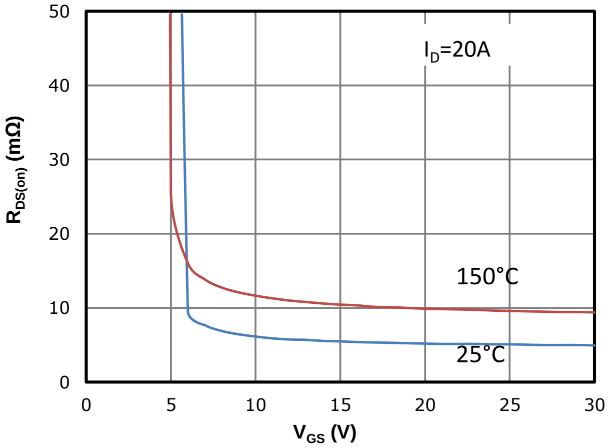


Fig 5: Rds(on) vs. Temperature

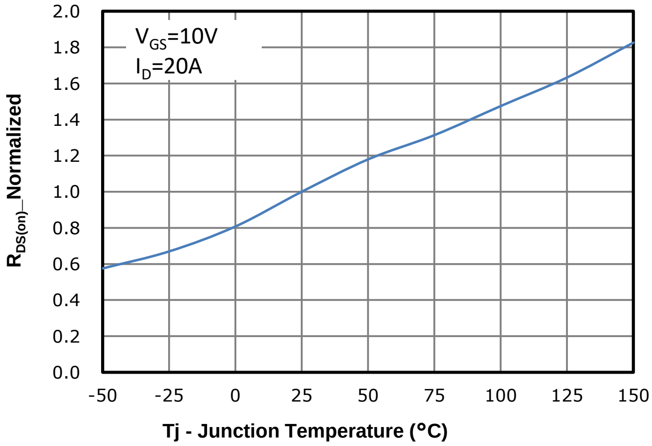


Fig 6: Vgs(th) vs. Temperature

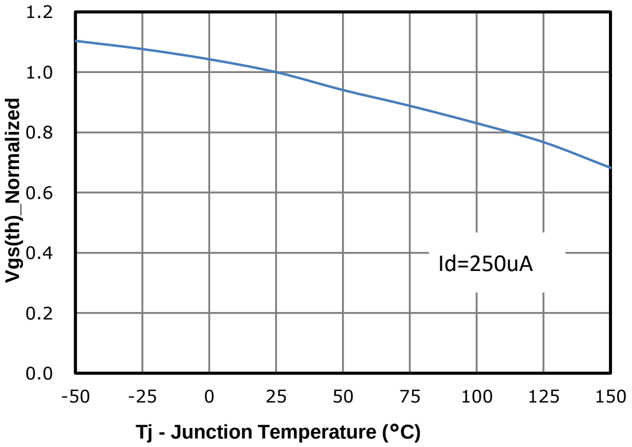


Fig 7: BVdss vs. Temperature

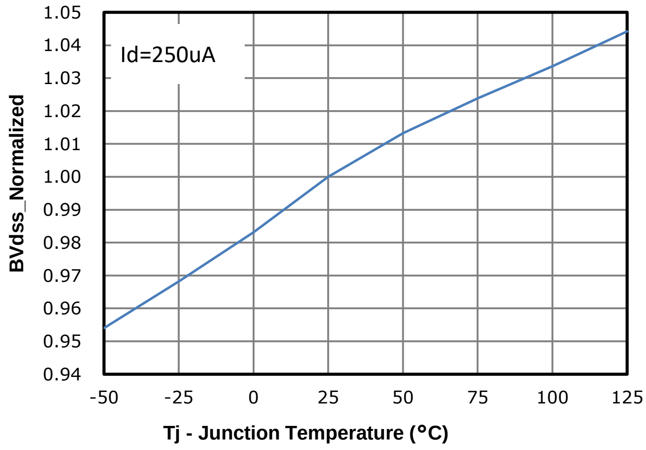


Fig 8: Capacitance Characteristics

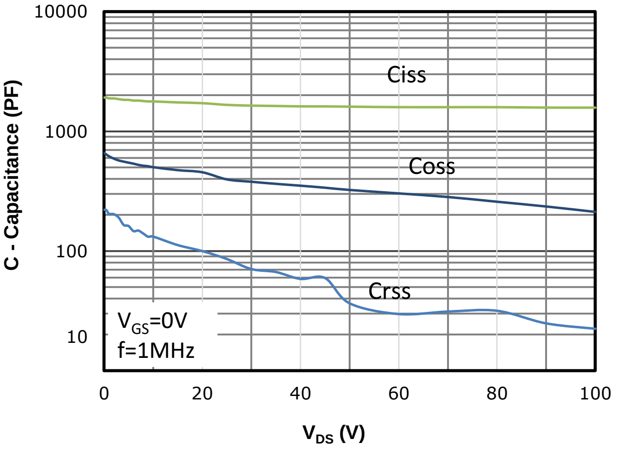


Fig 9: Gate ChargeCharacteristics

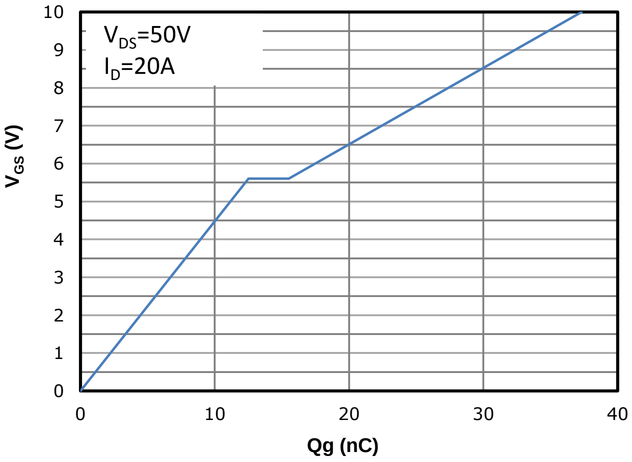


Fig 10: Body-diode Forward Characteristics

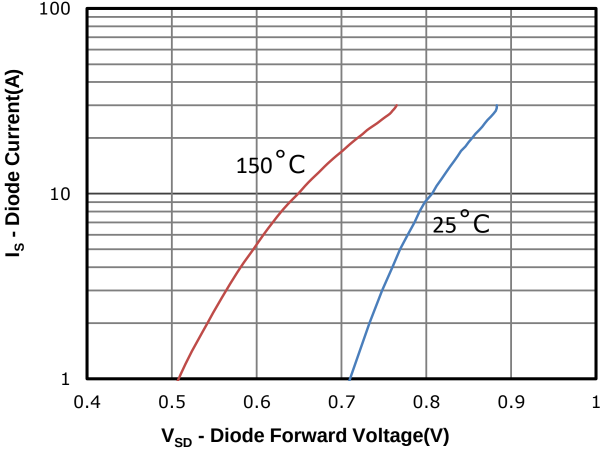


Fig 11: Power Dissipation

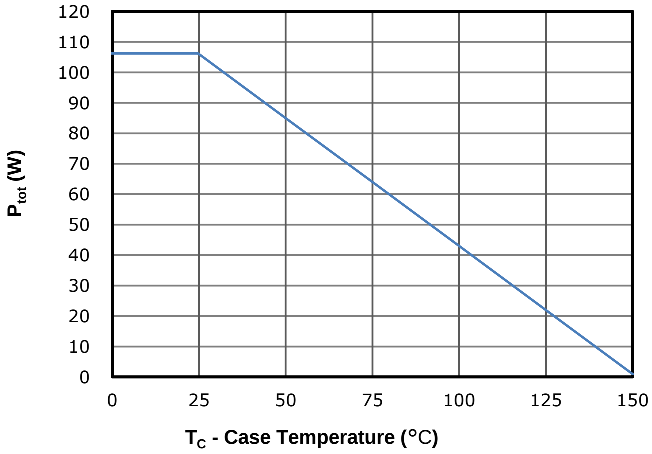


Fig 12: Drain Current Derating

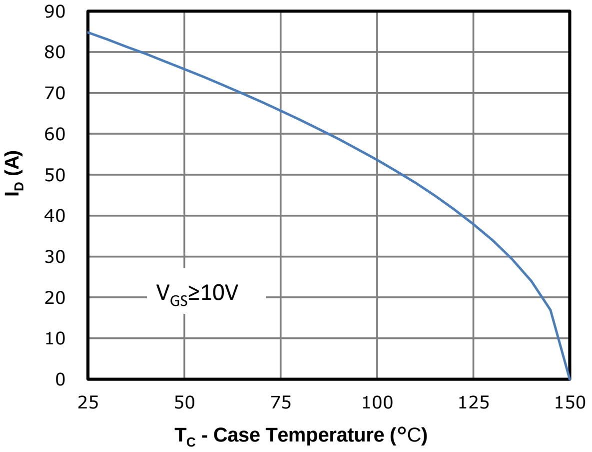


Fig 13: Safe Operating Area

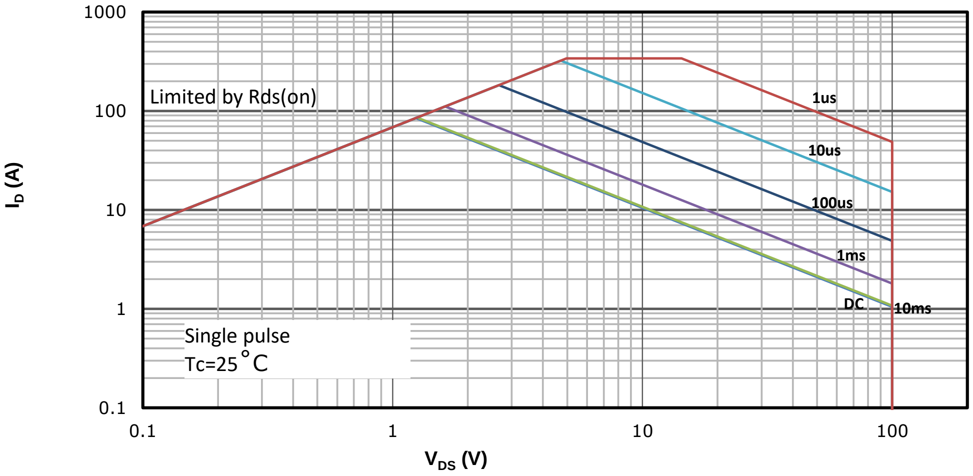
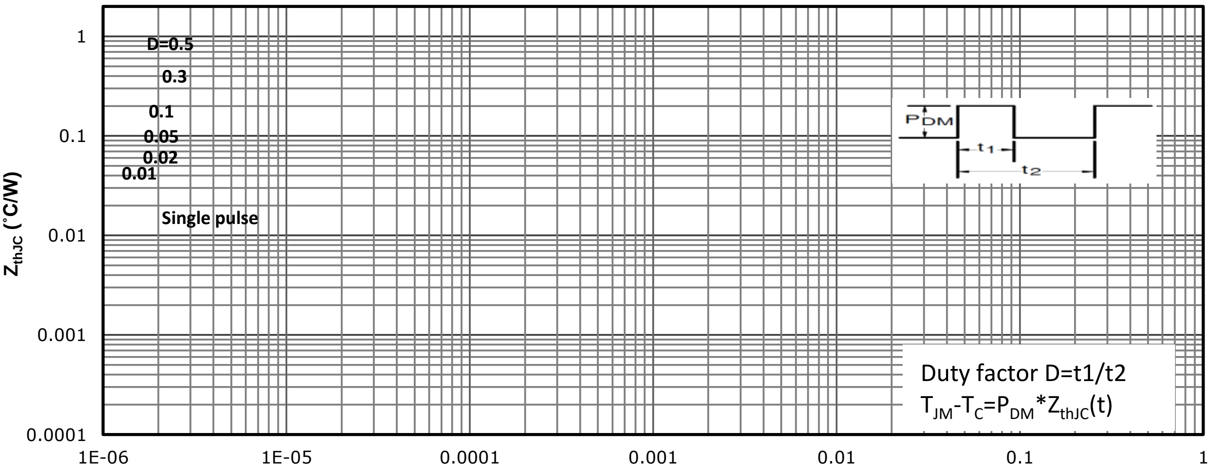
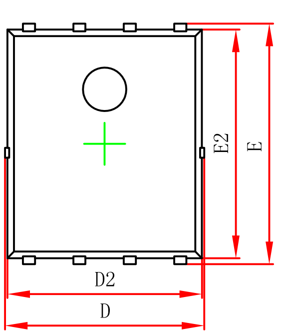


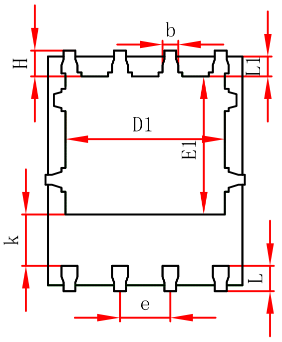
Fig 14: Max. Transient Thermal Impedance



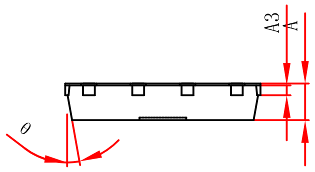
PDFN5x6-8L Package Outline Dimensions



Top View
[顶视图]



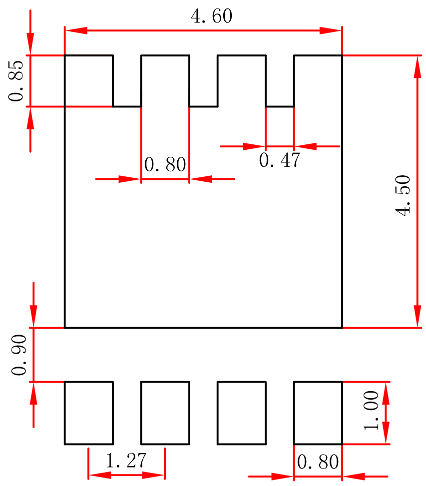
Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

PDFN5x6-8L Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.