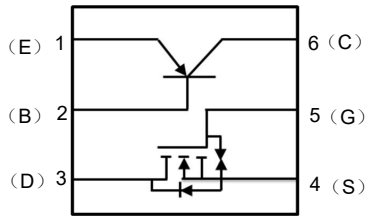
Feature

This device is Pb-Free, Halogen Free/BFR Free and RoHS compliant.

PNMT6N1B is composed by a transistor and a MOSFET

Top View

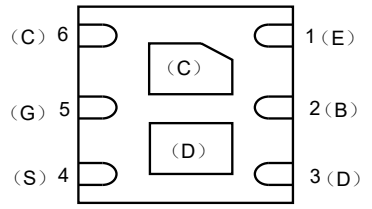


Transistor:

- Very low collector to emitter saturation voltage
- DC current gain >100
- 3A continuous collector current
- PNP epitaxial planar silicon transistor

MOSFET:

Bottom View



MOSFET Product Summary			
V_{DS}(V)	$R_{DS(on)}$(Ω)	$V_{GS(th)}$(V)	I_D(A)
30	7@ V_{GS}=2.5V,I_D=10mA	0.5 to 1.5	0.1

- Transistor

Absolute maximum rating@25℃

Parameter	Symbol	Value	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-30	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40	V
Emitter -Base Breakdown Voltage	$V_{(BR)EBO}$	-5	V
Collector Current	I_C	-3	A
Collector Peak Current	I_{CM}	-6	A
Base Current	I_B	-0.2	A
Base Peak Current	I_{BM}	-0.5	A
Total Dissipation @25°C	P_{tot}	1.2	W
Storage Temperature	T_{stg}	-65~150	°C
Max. Operating Junction Temperature	T_j	150	°C
Junction-to-Ambient Thermal Resistance(1)	$R_{\theta JA}$	104	°C/ W

Note 1: Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

Electrical characteristics per line@25℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
DC Current Gain	h_{FE}	I_C=-1mA,V_{CE}=-5.0V	150			-
		I_C=-1A,V_{CE}=-5.0V	100		-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=-0.1A,I_B=-1mA	-		-0.14	V
		I_C=-0.5A,I_B=-50mA	-		-0.17	
		I_C=-1A,I_B=-100mA	-		-0.31	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=-1A,I_B=-0.05mA			-1.1	V
Collector Cut-off Current (I_E=0)	I_{CBO}	V_{CB}=-40V			-0.1	μA
		V_{CB}=-30V T_C=125°C			-20	
Emitter Cut-off Current(I_C=0)	I_{EBO}	V_{EB}=-5V			-0.1	μA

➢ MOSFET

Absolute maximum rating@25℃

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	Continuous	I_D	0.10	A
	Pulsed	I_D	0.36	A
Total Power Dissipation	T_A=25℃	P_D	150	mW

Electrical characteristics per line@25℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	V_{DSS}	I_D =10μA,V_{GS}=0V	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =30V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS} =0V,V_{GS}=±20V	-	-	±1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	-	1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=2.5V, I_D =1mA		6.5	9	Ω
		V_{GS}=2.5V, I_D =10mA		7	9	Ω
		V_{GS}=4V, I_D =10mA	-	4	6	Ω
		V_{GS}=10V, I_D =100mA	-	3	5	Ω

Electrical characteristics per line@25℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
OFF CHARACTERISTICS						
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=0.1A	-	0.2	-	S
Source-Drain Diode Forward Voltage	VFSD (V)	ID=100mA,VGS=0V		0.75	1	V
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	-	40	pF
Output Capacitance	C_{OSS}		-	-	10	pF
Reverse Transfer Capacitance	C_{RSS}		-	-	5	pF
SWITCHING PARAMETERS						
Total Gate Charge	Qg	V_{GS}=4.5V, V_{DS}=6V, I_D=0.1A			0.5	nC
Gate-Source Charge	Qgs				0.2	nC
Gate-Drain Charge	Qgd				0.2	nC
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=30V, V_{GS}=10V, R_G=25Ω, RL=150Ω,I_D=0.1A	-	3		ns
Turn-On Rise Time	t_r		-	3.5		ns
Turn-Off Delay Time	$t_{d(off)}$		-	5		ns
Turn-On Fall Time	t_f		-	2.5		ns

Typical Characteristics

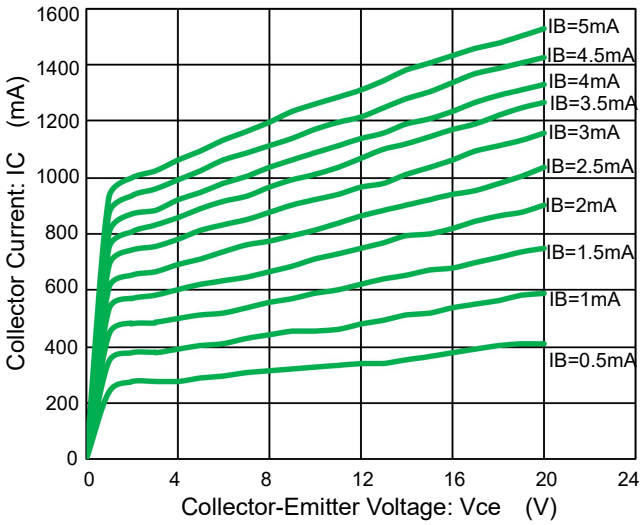


Fig1. Collector Current vs. Collector-Emitter Voltage

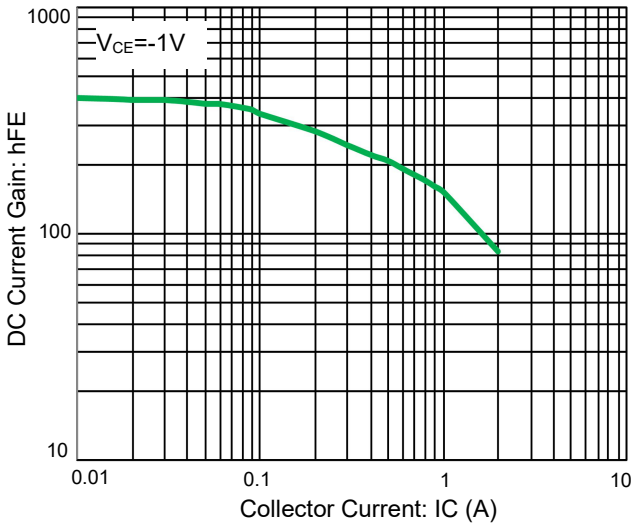


Fig2.DC Current Gain

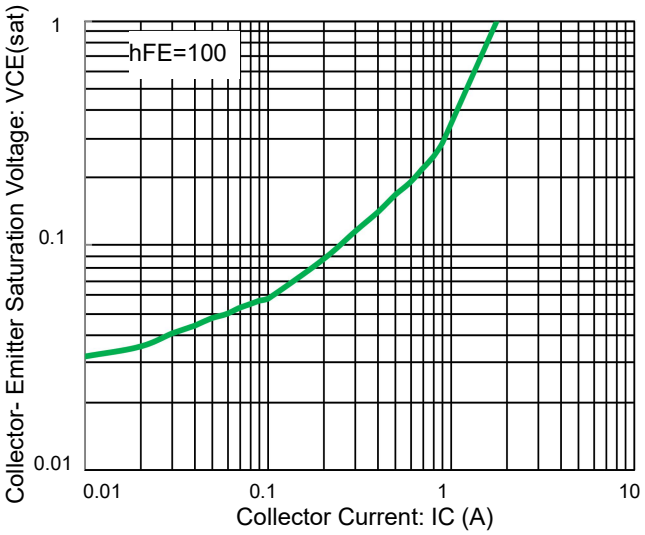


Fig 3.C-E saturation Voltage vs. Collector Current

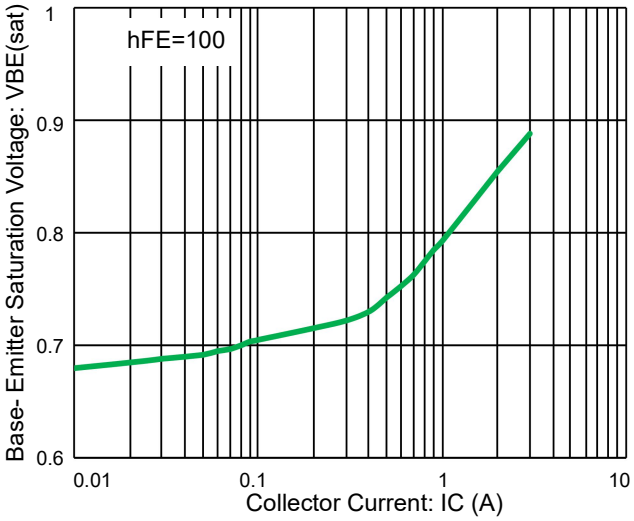


Fig 4. B-E Saturation Voltage vs. Collector Current

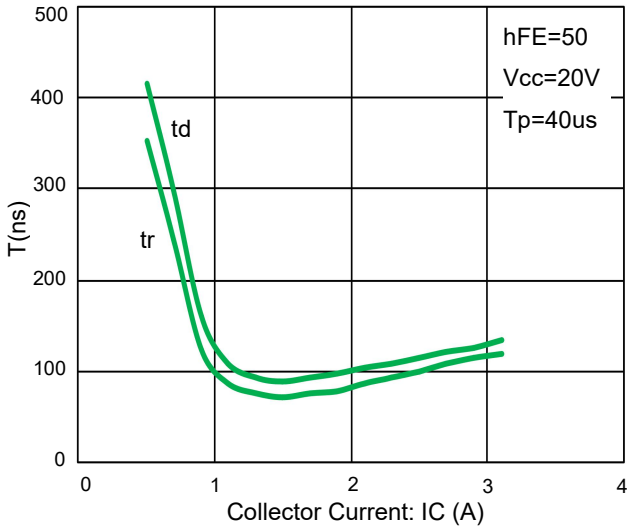


Fig 5.Switching Times Resistive Load

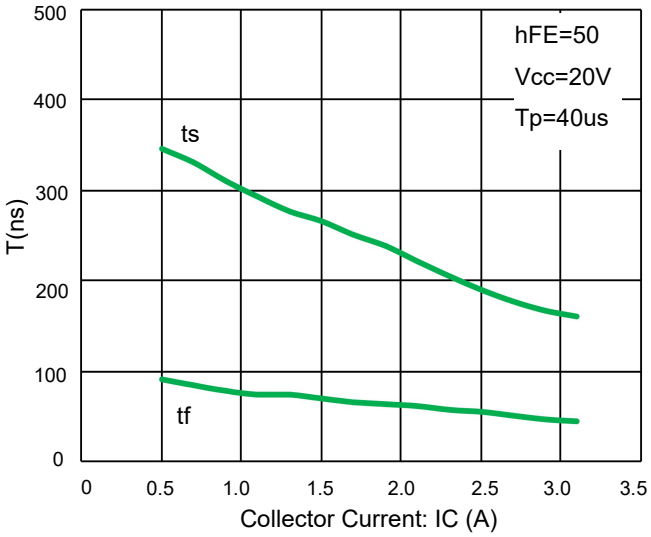


Fig 6. Switching Times Resistive Load

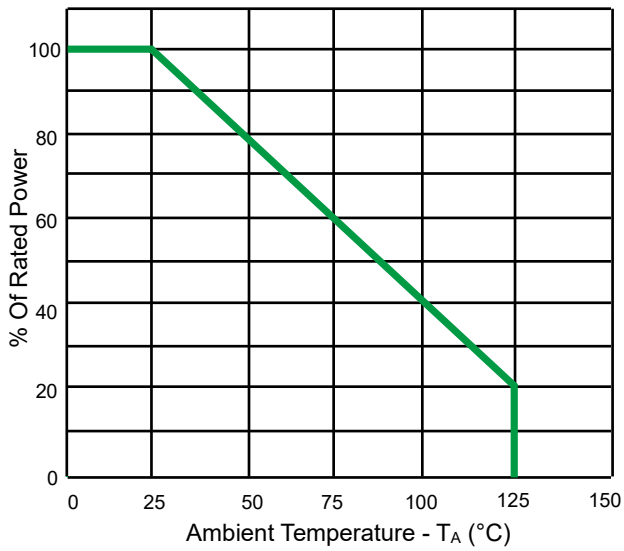


Fig 7. Power Derating Curve

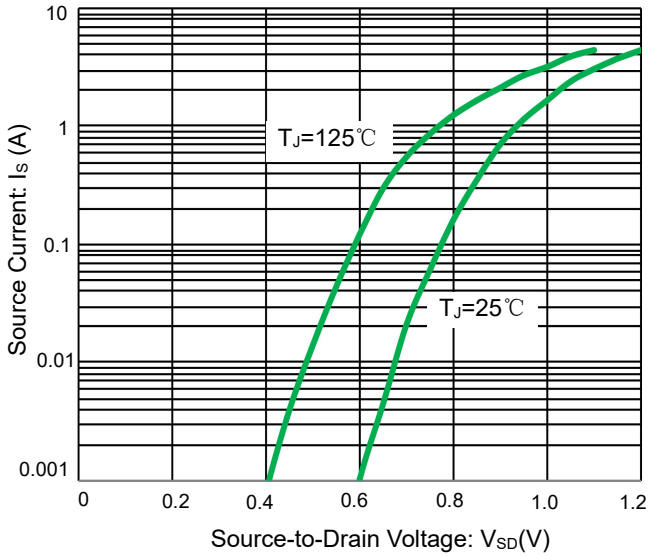


Fig 8. Body diode forward voltage

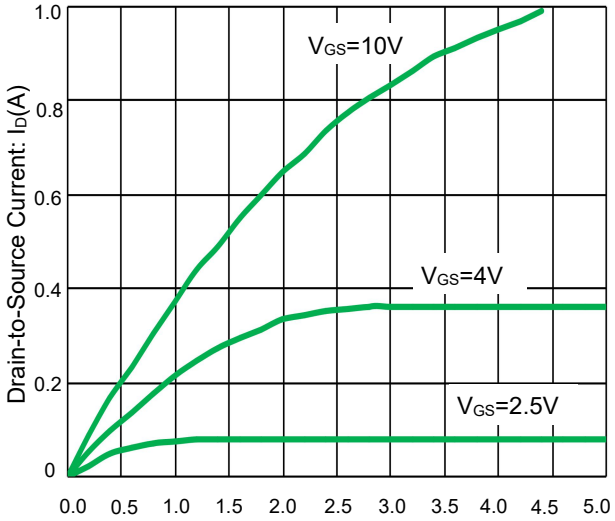


Fig 9. On-Region Characteristics

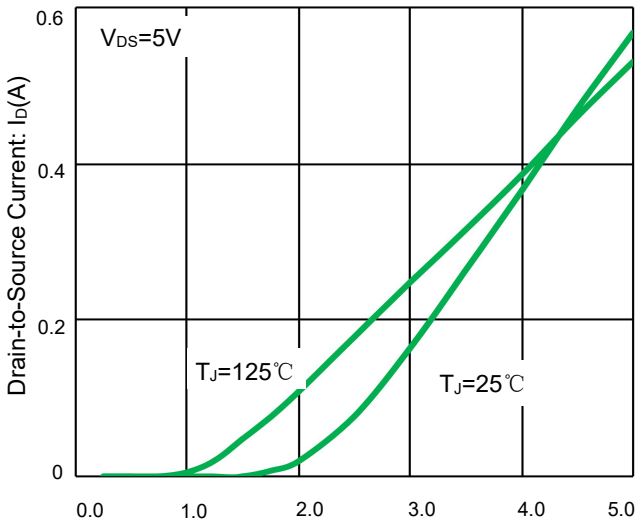


Fig 10. Transfer Characteristics

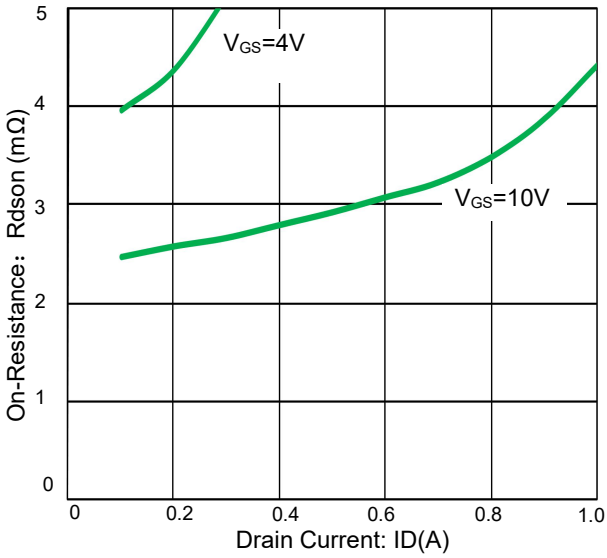


Fig 11. On-Resistance v.s. Drain Current and Gate Voltage

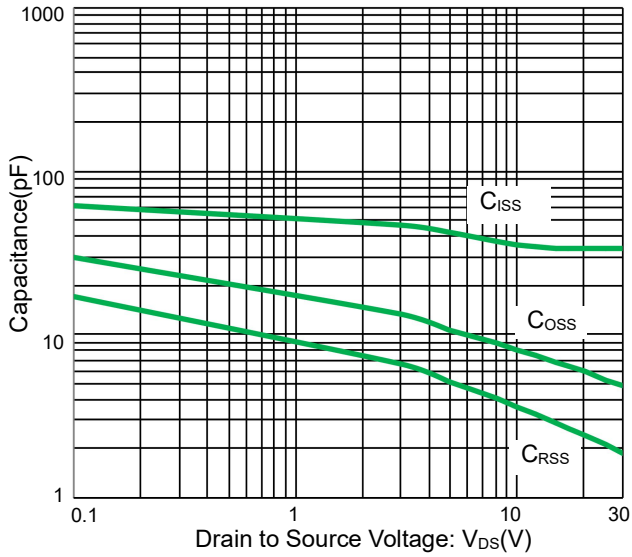


Fig 12. Capacitance Characteristic

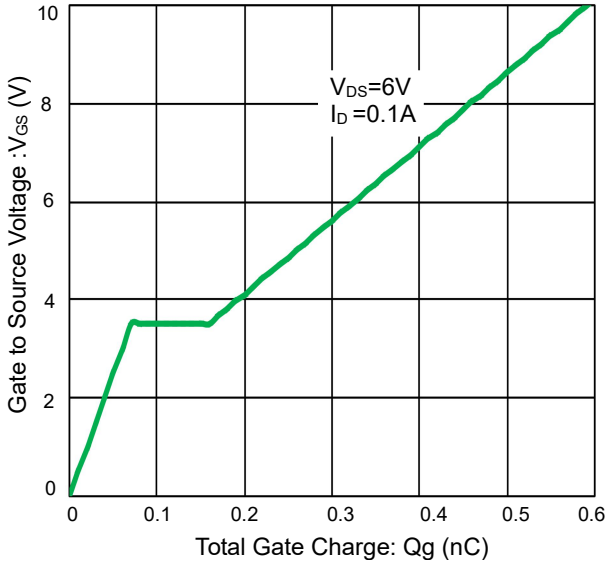


Fig 13. Gate Charge Characteristics

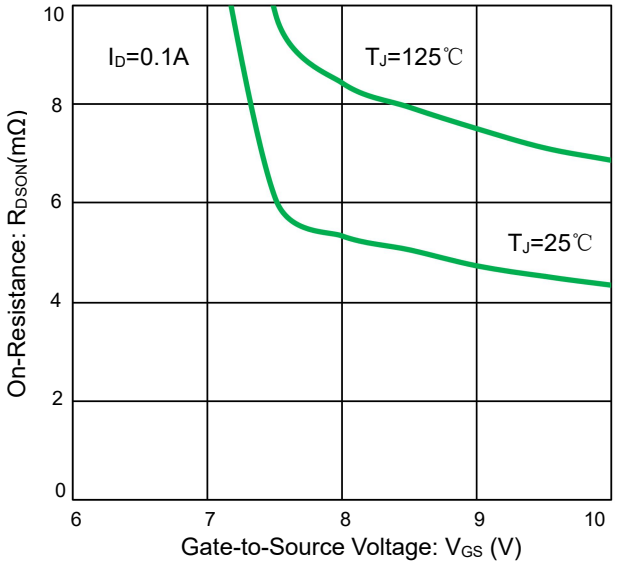


Fig 14. On-Resistance vs. Gate-to-Source Voltage

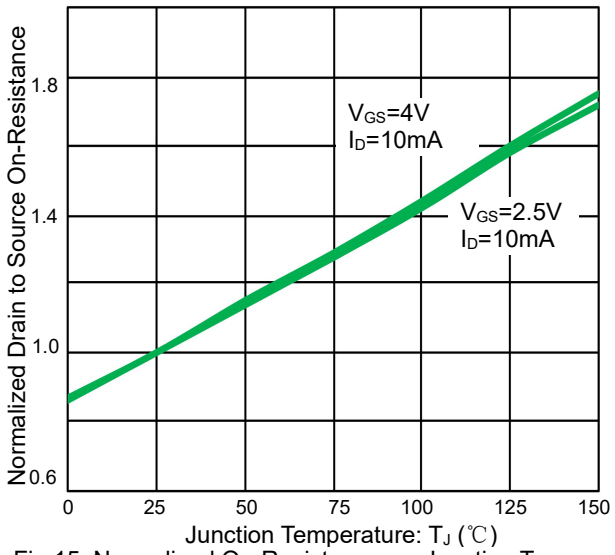
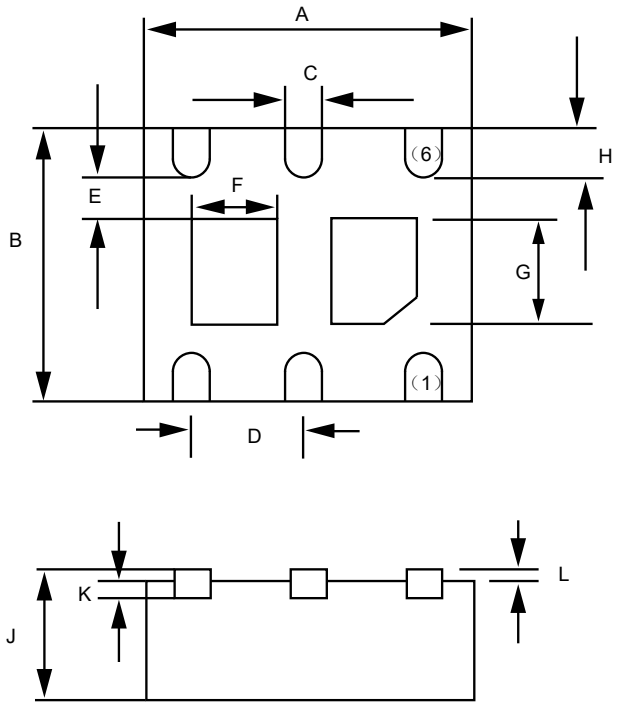
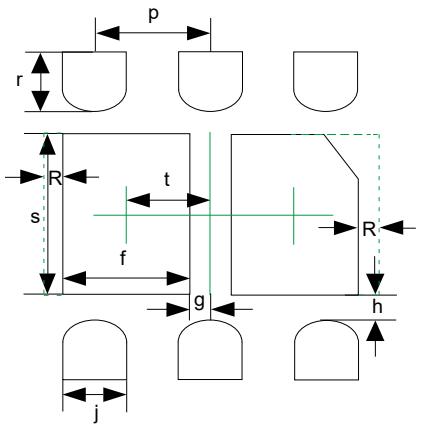


Fig 15. Normalized On-Resistance vs. Junction Temperature

Product dimension DFN-6L(2*2)



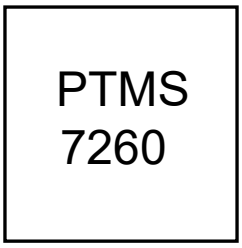
Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.924	2.076	0.076	0.082
B	1.924	2.076	0.076	0.082
C	0.250	0.350	0.010	0.014
D	0.650（typ.）		0.026（typ.）	
E	0.200 MIN.		0.008 MIN.	
F	0. 520	0.720	0.020	0.028
G	0.900	1.100	0.035	0.043
H	0.174	0.326	0.007	0.013
J	0.550	0.650	0.021	0.027
K	0.206 REF		0.206 REF	
L	0.203 REF		0.203 REF	



Dim	Millimeters	
	MIN	MAX
p	0.60	0.70
r	0.40	0.50
s	1.05	1.15
t	0.42	0.52
f	0.67	0.77
g	0.06	0.16
h	0.1	0.2
j	0.35	0.45
R	0.1	0.2

If there is enough place in PCB. It can be mounted with copper along the dotted line in order to optimize thermal design.

Marking information



Ordering information

Device	Package	Reel	Shipping
PNMT6N1B	DFN-6L (2*2)	7"	3000 / Tape & Reel

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