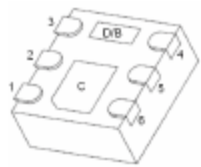
DFNWB2×2-6L-I Power Management Transistors-MOSFET

CJMNT31 PNP Power Transistor with N-MOSFET

$V_{(BR)DSS}/V_R$	$R_{DS(on)}$MAX	I_D/I_C
20V	360mΩ@4.5V	0.69A
	410mΩ@2.5V	
	480mΩ@1.8V	
	1.3Ω@1.5V	
-30V	/	-2A

DFNWB2×2-6L-I



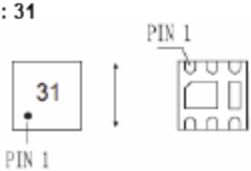
FEATURES

- Ultra low collector-to-emitter saturation voltage
- High DC current gain
- Small package DFNWB2x2-6L-I

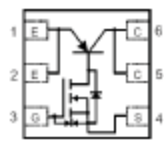
APPLICATIONS

- Charging circuit
- Other power management in portable equipments

MARKING: 31



Equivalent circuit



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
PNP Transistor			
V_{CBO}	Collector-Base Voltage	-30	V
V_{CEO}	Collector-Emitter Voltage	-30	V
V_{EBO}	Emitter-Base Voltage	-6	V
I_C	Collector Current-Continuous(Note1)	-3	A
	Collector Current-Continuous(Note2)	-2	A
I_{CM}	Collector Current-Pulse(Note3)	-6	A
N-MOSFET			
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±6	V
I_D	Drain Current -Continuous(Note1)	0.8	A
	Drain Current -Continuous(Note2)	0.69	A
I_{DM}	Drain Current - Pulse(Note3)	1.4	A
Power Dissipation, Temperature and Thermal Resistance			
P_D	Power Dissipation	0.7	W
P_C	Power Dissipation (Tc=25℃ ,Note1)	2.5	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	179	℃/W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55~+150	℃
T_L	Lead Temperature	260	℃

ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
PNP Transistor						
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-1mA,I_E=0	-30			V
Collector-emitter breakdown	$V_{(BR)CEO}$	I_C=-10mA,I_B=0	-30			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-100μA,I_C=0	-6			V
Collector cut-off current	I_{CBO}	V_{CB}=-30V,I_E=0			-0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-5V,I_C=0			-0.1	μA
DC current gain	h_{FE}	V_{CE}=-2V, I_C=-1A	100		300	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-2A,I_B=-200mA		-0.2	-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=-2A,I_B=-200mA		-1	-1.5	V
Base-emitter voltage	$V_{BE(on)}$	V_{CE}=-2V, I_C=-500mA		-0.7	-1	V
N-MOSFET						
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D=250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±5V, V_{DS} = 0V			±5	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.45		1	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =4.5V, I_D =0.55A			360	mΩ
		V_{GS} =2.5V, I_D =0.45A			410	mΩ
		V_{GS} =1.8V, I_D =0.35A			480	mΩ
		V_{GS} =1.5V, I_D =0.1A			1.3	Ω
Diode forward voltage	V_{SD}	I_S=0.35A, V_{GS} = 0V	0.5		1	V
DYNAMIC PARAMETERS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		50		pF
Output Capacitance	C_{oss}			13		pF
Reverse Transfer Capacitance	C_{rss}			8		pF
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=4.5V,V_{DS}=10V, R_L=10Ω,R_{GEN}=6Ω, I_D=0.5A		22		ns
Turn-on rise time	t_r			80		ns
Turn-off delay time	$t_{d(off)}$			700		ns
Turn-off fall time	t_f			650		ns
Total Gate Charge	Q_g	V_{DS} =10V,V_{GS} =4.5V, I_D =0.6A		1.15		nC
Gate-Source Charge	Q_{gs}			0.15		nC
Gate-Drain Charge	Q_{gd}			0.23		nC

Note:

1、 Surface mounted on FR-4 board using 1 square inch pad size, 1oz copper

2、 Surface mounted on FR-4 board using minimum pad size, 1oz copper

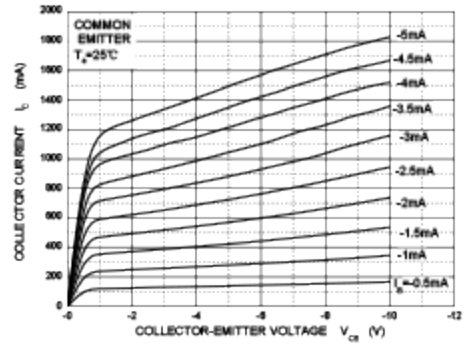
3、 Pulse test: pulse width =300μs, duty cycle≤ 2%

4、 These parameters have no way to verify.

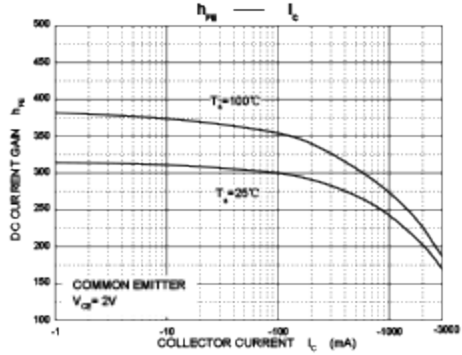
PNP Transistor Typical Characteristics

PNP Transistor

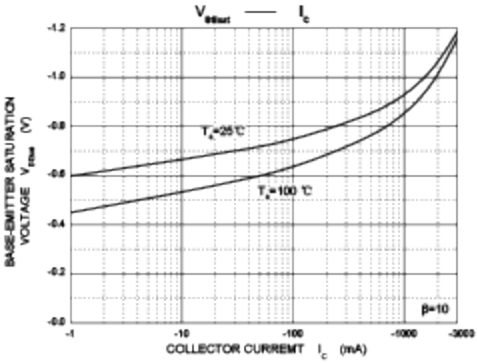
Static Characteristic



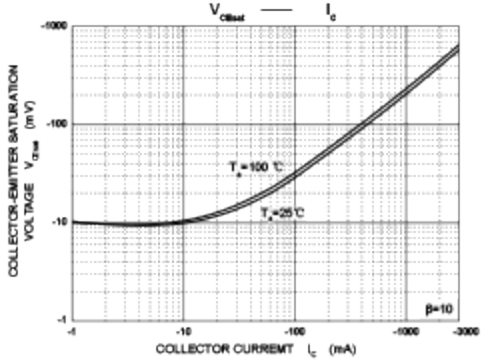
h_{FE} —— I_C



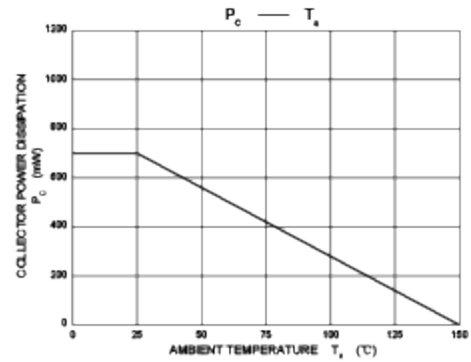
V_{BEsat} —— I_C



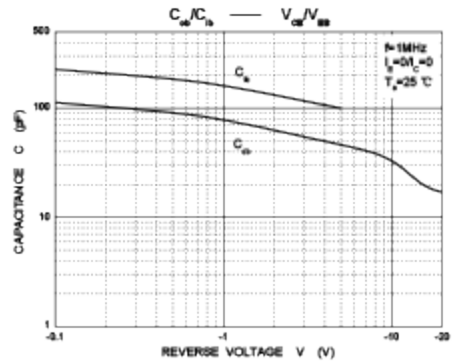
V_{CEsat} —— I_C



P_C —— T_a

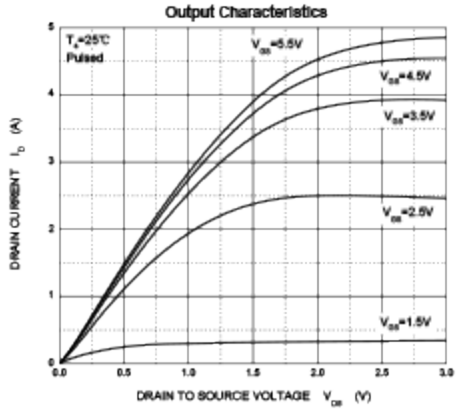


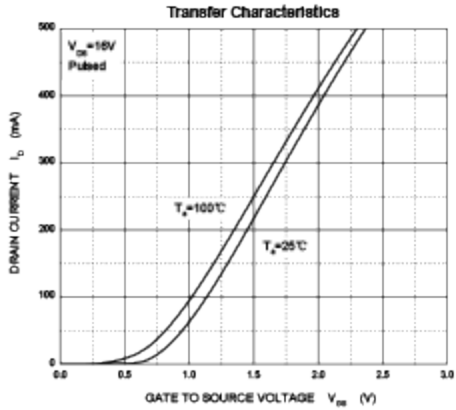
C_{ob}/C_{ib} —— V_{CB}/V_{EB}

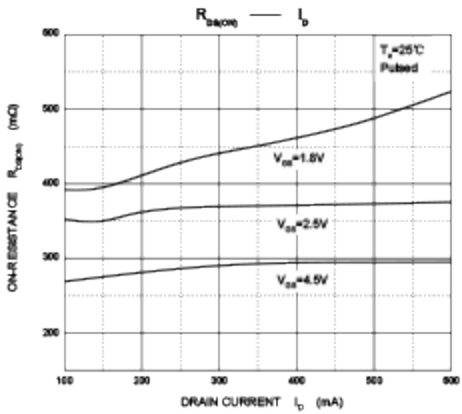


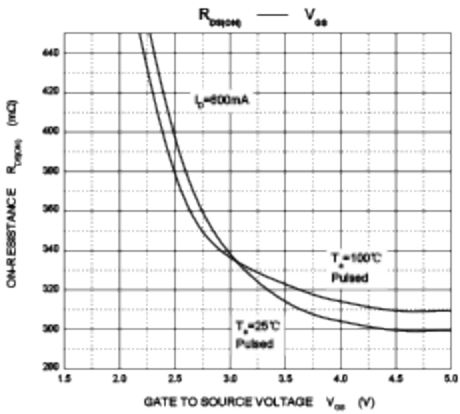
N-MOSFET Typical Characteristics

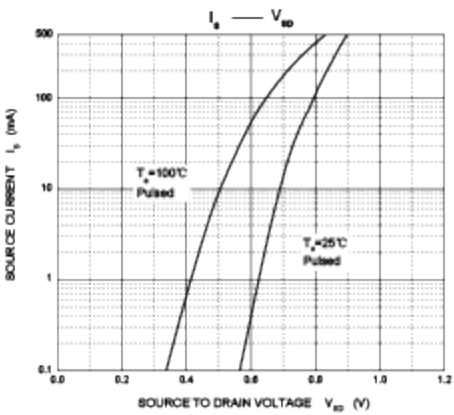
N-channel Characteristics

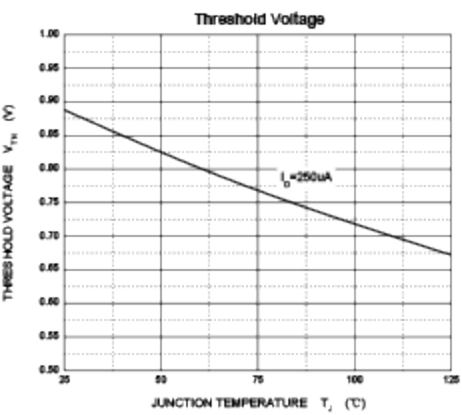




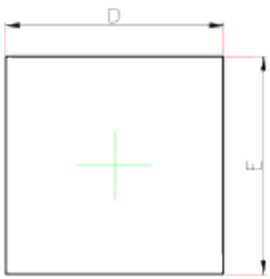


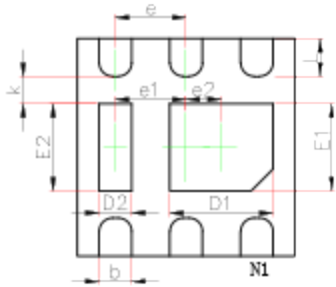


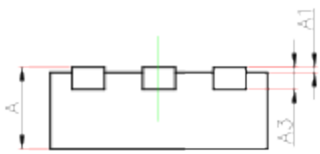




DFNWB2×2-6L-Ⅰ Package Outline Dimensions

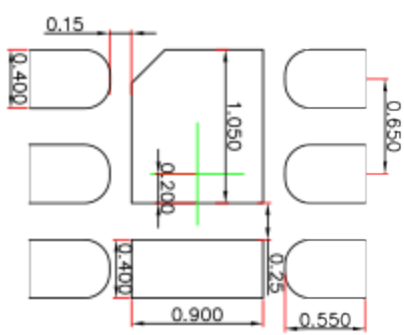






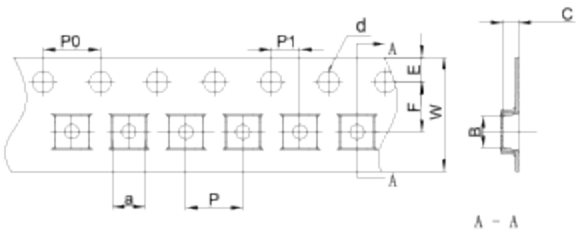
Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.032
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.850	1.050	0.033	0.041
E1	0.700	0.900	0.028	0.035
D2	0.200	0.400	0.008	0.016
E2	0.700	0.900	0.028	0.035
e1	0.650TYP.		0.026TYP.	
e2	0.325TYP		0.013TYP	
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.300	0.400	0.012	0.016

DFNWB2×2-6L-Ⅰ Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.050mm.
3.The pad layout is for reference purposes only.

DFNWB2×2-6L Embossed Carrier Tape

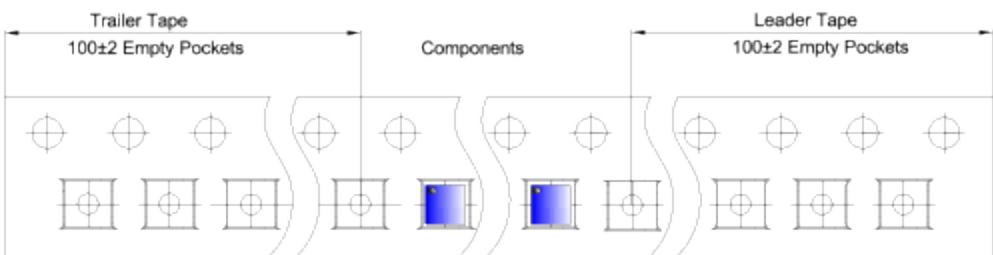


Packaging Description:

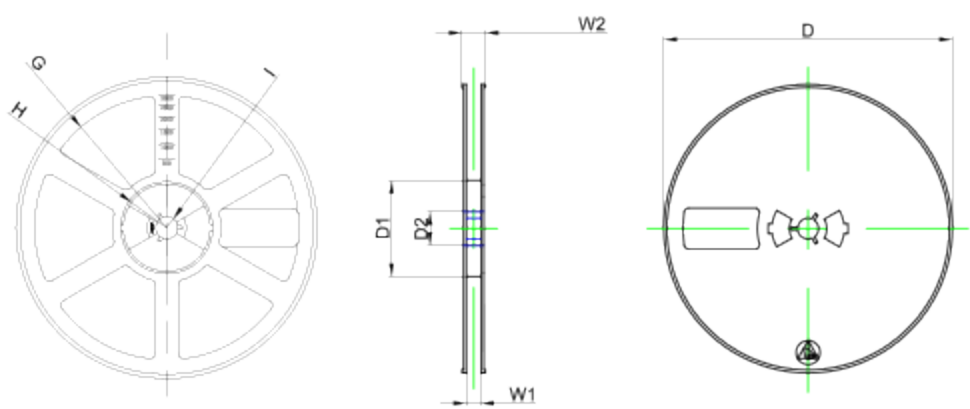
DFNWB2×2-6L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 18.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
DFNWB2×2-6L	2.30	2.30	1.10	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

DFNWB2×2-6L Tape Leader and Trailer



DFNWB2×2-6L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø180.00	60.00	13.00	R78.00	R25.60	R6.50	9.50	13.10

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	