



Features

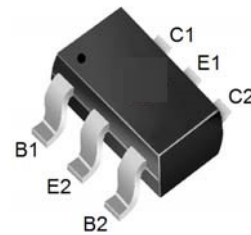
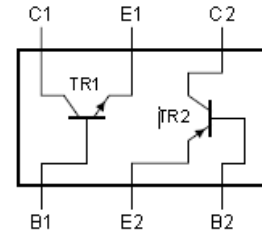
- General-purpose transistor.
- High current.
- Reduces component count on Printed-Circuit Board (PCB).
- Reduces pick and place costs.

Applications

- General-purpose switching and amplification.
- Complementary driver.
- Half-bridge and full-bridge driver.

Mechanical Data

- Case: SOT-23-6L.
- Molding compound, UL flammability classification rating 94V-0.
- Terminals: Matte tin plated leads, solderable per MIL-STD-202, Method 208.



NMB2227A-6L

SOT-23-6L

Maximum Ratings (@T_A=25°C unless otherwise specified For Tr1 and Tr2 in common)

Symbol	Parameter	Value	Units
MAXIMUM RATINGS			
V _{CB0}	collector-base voltage	TR1 (NPN)	75
		TR2 (PNP)	-60
V _{CEO}	collector-emitter voltage	TR1 (NPN)	40
		TR2 (PNP)	-60
V _{EBO}	Emitter-Base Voltage	6	V
I _C	Collector Current	0.6	A
I _{CM}	peak collector current, single pulse; tp≤1 ms	0.8	A
I _{BM}	peak base current, single pulse; tp≤1 ms	0.2	A
Thermal Characteristic			
P _D (Note 1)	Power Dissipation Ta≤25°C	300	mW
R _{θJA} (Note 2)	Thermal Resistance, Junction to Ambient	417	°C/W
T _J	Junction Temperature	-55~150	°C
T _{STG}	Junction and Storage Temperature	-55 to +150	°C

Notes:1、 Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

2、 Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

3、 pulsed :tp ≤300μs; δ≤ 0.02.



Electrical Characteristics (@ $T_A=25^{\circ}\text{C}$ unless otherwise specified For Tr1 and Tr2 in common)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
TR1 (NPN)						
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0, T_A=25^{\circ}\text{C}$	-	-	10	nA
		$V_{CB}=60\text{V}, I_E=0, T_J=125^{\circ}\text{C}$	-	-	10	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0\text{A}, T_A=25^{\circ}\text{C}$	-	-	10	nA
DC Current Gain (Note 3)	h_{FE}	$I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$	50	-	-	-
		$I_C = 10\text{mA}, V_{CE} = 10\text{V}$	75	-	-	-
		$I_C = 150\text{mA}, V_{CE} = 10\text{V}$	100	-	300	-
		$I_C = 500\text{mA}, V_{CE} = 10\text{V}$	40	-	-	-
Collector-Emitter Saturation Voltage(Note 3)	$V_{CE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	-	0.3	V
		$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	1	
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	0.6	-	1.2	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	2	
Transition frequency	f_T	$V_{CE}=20\text{V}, I_C=20\text{mA}$ $f=100\text{MHz}$	300	-	-	MHz
collector capacitance	C_C	$V_{CB}=10\text{V}, f=1\text{MHz}$	-	-	8	pF
emitter capacitance	C_E	$V_{EB}=0.5\text{V}, f=1\text{MHz}$	-	-	25	pF
delay time	t_d	$I_C = -150\text{mA}$ $I_{B(on)}=15\text{mA}$ $I_{B(off)}=-15\text{mA}$ $V_{CC}=10\text{V}$	-	-	12	ns
rise time	t_r		-	-	30	ns
turn-on time	t_{on}		-	-	40	ns
storage time	t_s		-	-	300	ns
fall time	t_f		-	-	65	ns
turn-off time	t_{off}		-	-	365	ns
TR2 (PNP)						
Collector cut-off current	I_{CBO}	$V_{CB}=-50\text{V}, I_E=0, T_A=25^{\circ}\text{C}$	-	-	-10	nA
		$V_{CB}=-50\text{V}, I_E=0, T_J=125^{\circ}\text{C}$	-	-	-10	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0\text{A}, T_A=25^{\circ}\text{C}$	-	-	-50	nA
DC Current Gain (Note 3)	h_{FE}	$I_C = -0.1\text{mA}, V_{CE} = -10\text{V}$	75	-	-	-
		$I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$	100	-	-	-
		$I_C = -10\text{mA}, V_{CE} = -10\text{V}$	100	-	-	-
		$I_C = -150\text{mA}, V_{CE} = -10\text{V}$	100	-	300	-
		$I_C = -500\text{mA}, V_{CE} = -10\text{V}$	50	-	-	-
Collector-Emitter Saturation Voltage(Note 3)	$V_{CE(sat)}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-	-0.4	V
		$I_C=-500\text{mA}, I_B=-50\text{mA}$	-	-	-1.6	
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$	-	-	-1.3	V
		$I_C = -500\text{mA}, I_B = -50\text{mA}$	-	-	-2.6	
Transition frequency	f_T	$V_{CE}=-20\text{V}, I_C=-50\text{mA}$ $f=100\text{MHz}$	200	-	-	MHz
collector capacitance	C_C	$V_{CB}=-10\text{V}, f=1\text{MHz}$	-	-	8	pF
emitter capacitance	C_E	$V_{EB}=-2\text{V}, f=1\text{MHz}$	-	-	30	pF
delay time	t_d	$I_C = -150\text{mA}$ $I_{B(on)}=-15\text{mA}$	-	-	12	ns
rise time	t_r		-	-	30	ns

turn-on time	t_{on}	$I_{Boff}=15\text{ mA}$ $V_{CC}=-10\text{ V}$	-	-	40	ns
storage time	t_s		-	-	300	ns
fall time	t_f		-	-	65	ns
turn-off time	t_{off}		-	-	365	ns

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted For Tr1)

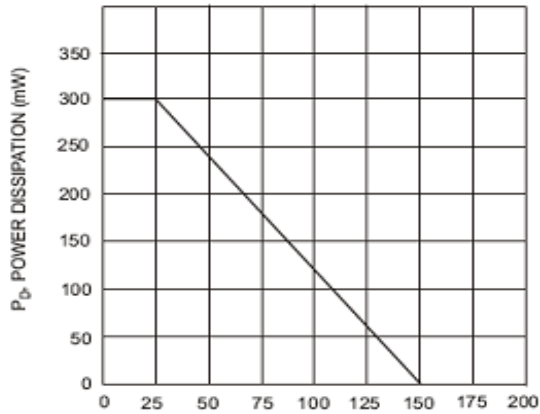


Fig. 1 Max Power Dissipation vs Ambient Temperature

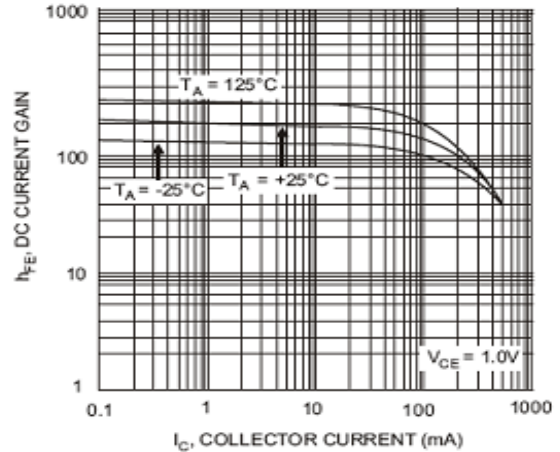


Fig. 2 Typical DC Current Gain vs Collector Current

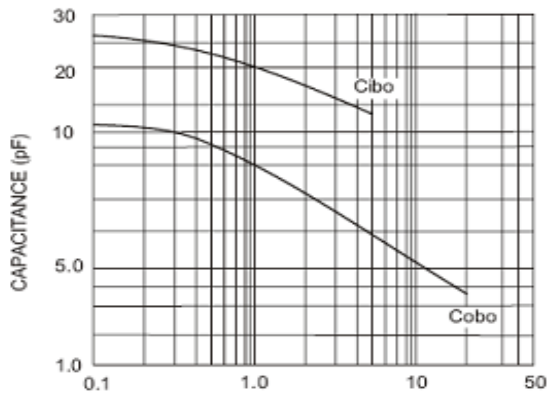


Fig. 3 Typical Capacitance

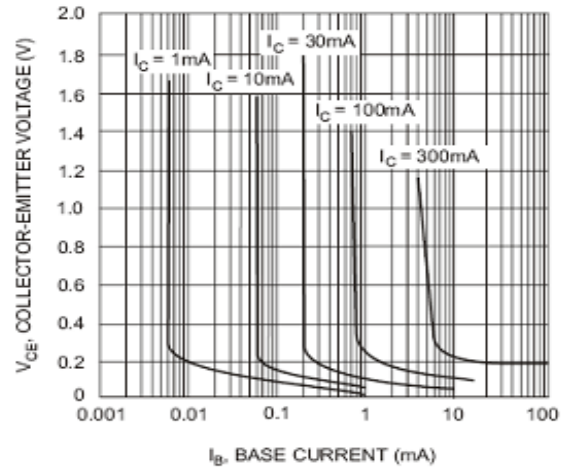


Fig. 4 Typical Collector Saturation Region

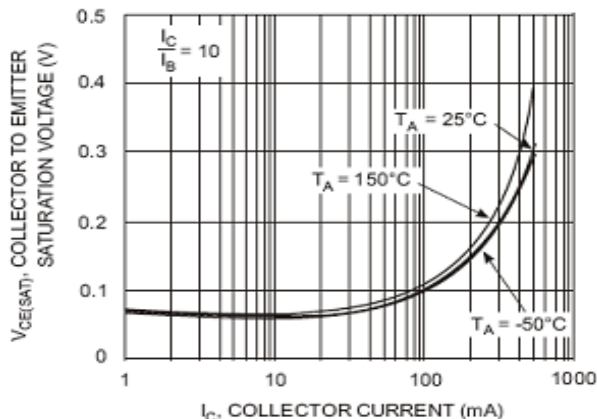


Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

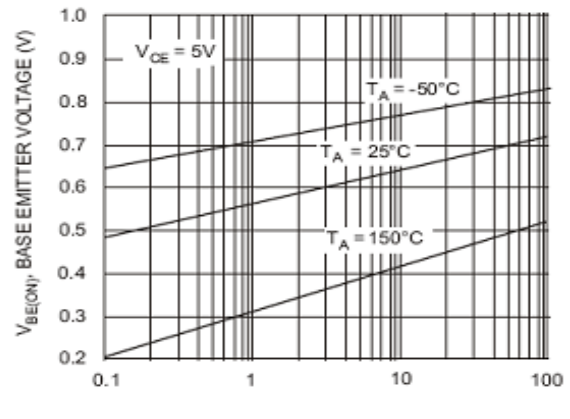
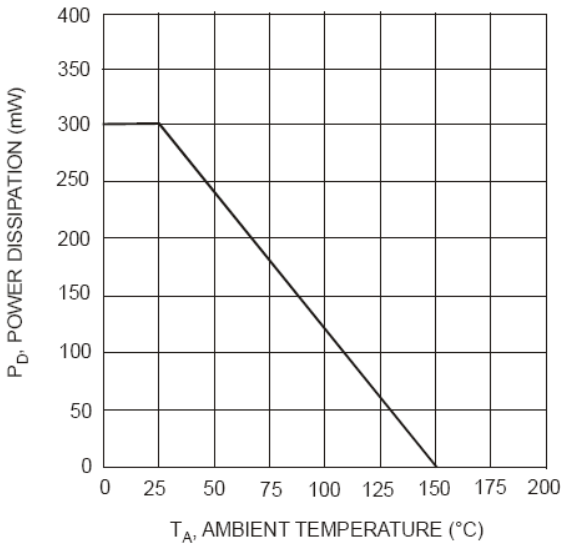


Fig. 6 Base Emitter Voltage vs. Collector Current

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted For Tr2)



T_A , AMBIENT TEMPERATURE ($^\circ\text{C}$)
Fig. 1, Max Power Dissipation vs Ambient Temperature

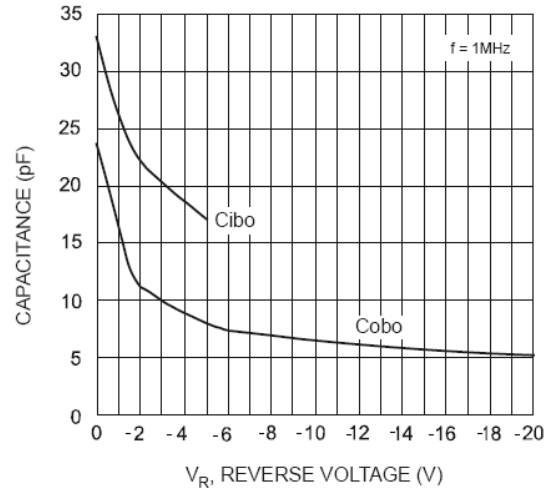


Fig. 2, Typical Capacitance Characteristics

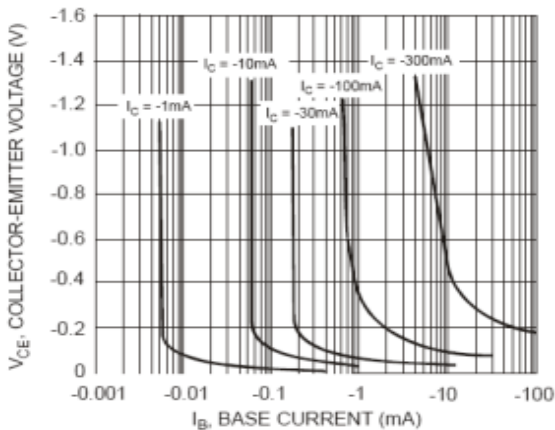


Fig. 3, Typical Collector Saturation Region

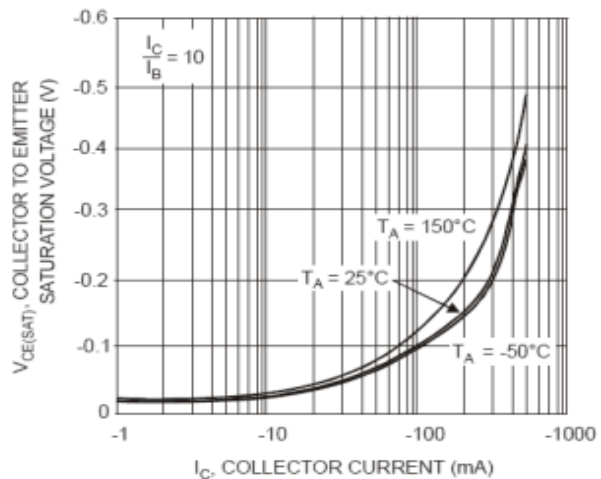


Fig. 4, Collector-Emitter Saturation Voltage vs. Collector Current

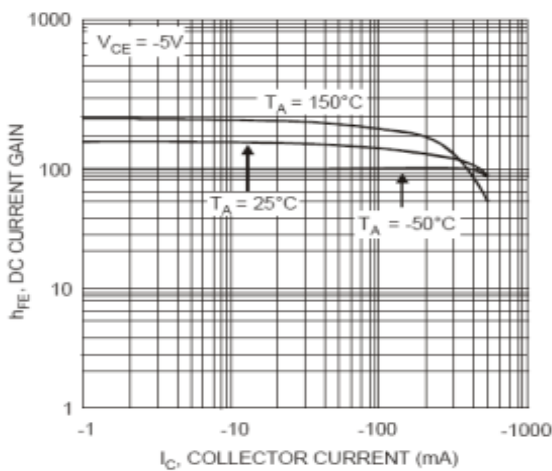


Fig. 5, DC Current Gain vs Collector Current

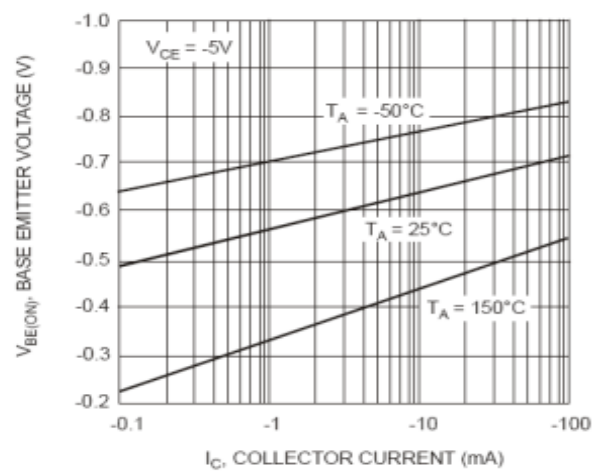
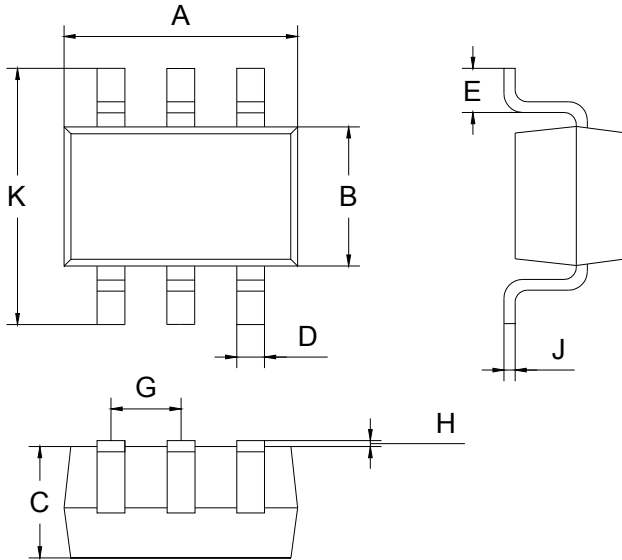


Fig. 6, Base-Emitter Voltage vs. Collector Current

Package Outline Dimensions(unit:mm)

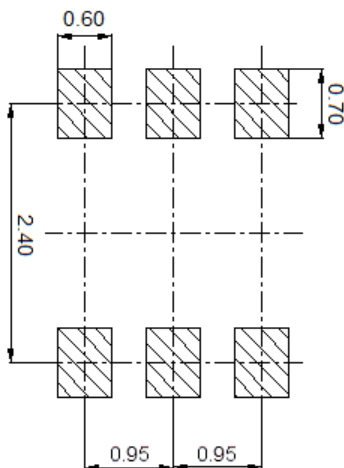
SOT-23-6L



SOT-23-6L		
Dim	Min	Max
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
G	0.90	1.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

SOLDERING FOOTPRINT(unit:mm)

SOT-23-6L



Ordering Information

Part Number	Package	Shipping	Marking Code
NMB2227A-6L	SOT-23-6L	3000/Tape&Reel	3B