

ABC847PN-HF (NPN + PNP)

RoHS Device

Halogen Free

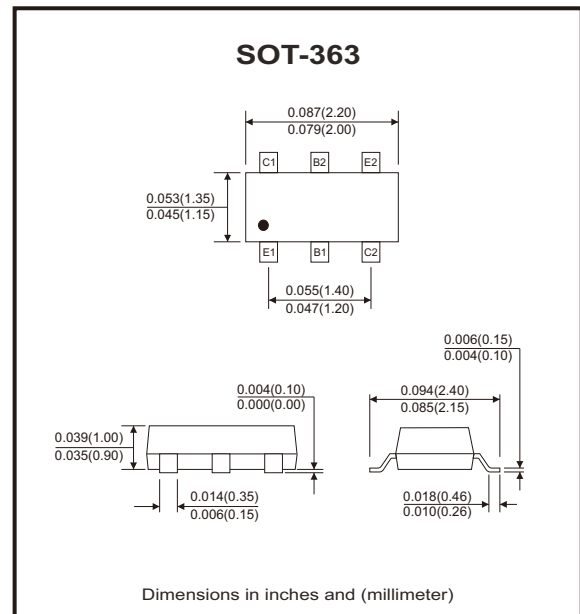


Features

- Epitaxial die construction.
- Two isolated NPN and PNP transistors in one Package.
- Ultra-small surface mount package.
- AEC-Q101 Qualified.

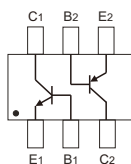
Mechanical data

- Case: SOT-363, molded plastic.
- Terminals: Tin plated, solderable per MIL-STD-750, method 2026.
- Mounting position: Any.



Circuit Diagram

B :Base
E :Emitter
C :Collector



Maximum Ratings (T_J=25°C unless otherwise noted)

Parameter	Symbol	NPN	PNP	Unit
Collector-base voltage	V _{CBO}	50	-50	V
Collector-emitter voltage	V _{CEO}	45	-45	V
Emitter-base voltage	V _{EBO}	6	-5	V
Collector current-continuous	I _c	0.1	-0.1	A
Collector power dissipation	P _D	200		mW
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150		°C

Electrical Characteristics of NPN Transistor (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = 10μA, I _E = 0A	50			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = 10mA, I _B = 0A	45			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = 1μA, I _C = 0A	6			V
Collector cut-off current	I _{CBO}	V _{CB} = 30V, I _E = 0A			15	nA
Emitter cut-off current	I _{EBO}	V _{EB} = 5V, I _C = 0A			15	nA
DC current gain	h _{FE}	V _{CE} = 5V, I _C = 2mA	200		450	
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = 10mA, I _B = 0.5mA			0.25	V
		I _C = 100mA, I _B = 5mA			0.6	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C = 10mA, I _B = 0.5mA		0.7		V
		I _C = 100mA, I _B = 5mA		0.9		V
Base-emitter voltage	V _{BE(on)}	V _{CE} = 5V, I _C = 2mA	580		700	mV
		V _{CE} = 5V, I _C = 10mA			720	mV
Transition frequency	f _T	V _{CE} = 5V, I _C = 10mA, f = 100MHz	100			MHz
Collector output capacitance	C _{ob}	V _{CB} = 10V, I _E = 0A, f = 1MHz			6.0	pF
Noise figure	NF	V _{CE} = 5V, I _C = 0.2mA, f = 1KHz, R _s = 2KΩ, BW = 200Hz			10	dB

Electrical Characteristics of PNP Transistor (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = -10μA, I _E = 0A	-50			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = -10mA, I _B = 0A	-45			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = -1μA, I _C = 0A	-5			V
Collector cut-off current	I _{CBO}	V _{CB} = -30V, I _E = 0A			-15	nA
Emitter cut-off current	I _{EBO}	V _{EB} = -5V, I _C = 0A			-15	nA
DC current gain	h _{FE}	V _{CE} = -5V, I _C = -2mA	220		475	
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = -10mA, I _B = -0.5mA			-0.3	V
		I _C = -100mA, I _B = -5mA			-0.65	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C = -10mA, I _B = -0.5mA		-0.7		V
		I _C = -100mA, I _B = -5mA			-0.95	V
Base-emitter voltage	V _{BE(on)}	V _{CE} = -5V, I _C = -2mA	-600		-750	mV
		V _{CE} = -5V, I _C = -10mA			-820	mV
Transition frequency	f _T	V _{CE} = -5V, I _C = -10mA, f = 100MHz	100			MHz
Collector output capacitance	C _{ob}	V _{CB} = -10V, I _E = 0A, f = 1MHz			4.5	pF
Noise figure	NF	V _{CE} = -5V, I _C = -0.2mA, f = 1KHz, R _s = 2KΩ, BW = 200Hz			10	dB

(NPN) Typical Rating and Characteristic Curves (ABC847PN-HF)

Fig.1 - Static Characteristic

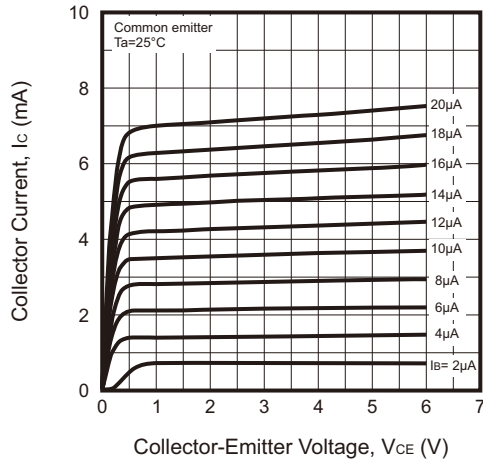


Fig.2 - h_{FE} — I_C

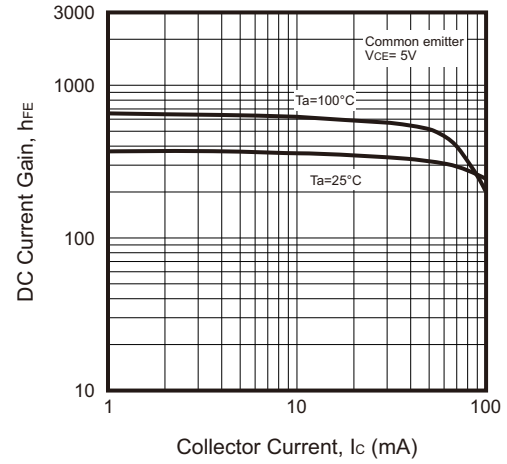


Fig.3 - V_{BEsat} — I_C

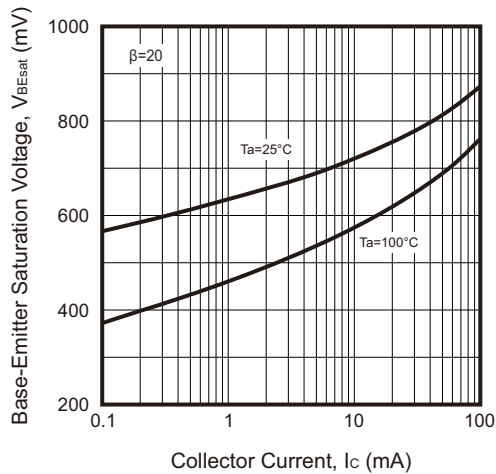


Fig.4 - V_{CEsat} — I_C

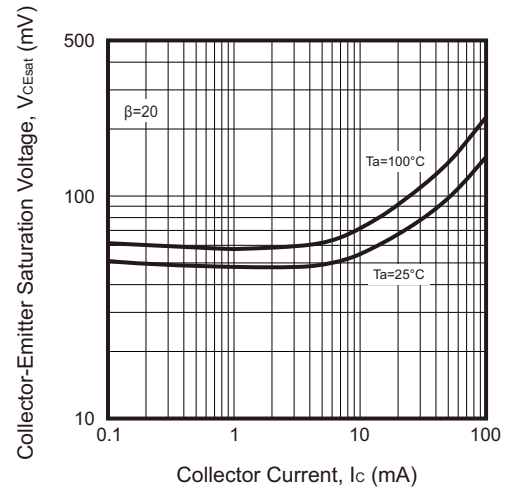


Fig.5 - I_C — V_{BE}

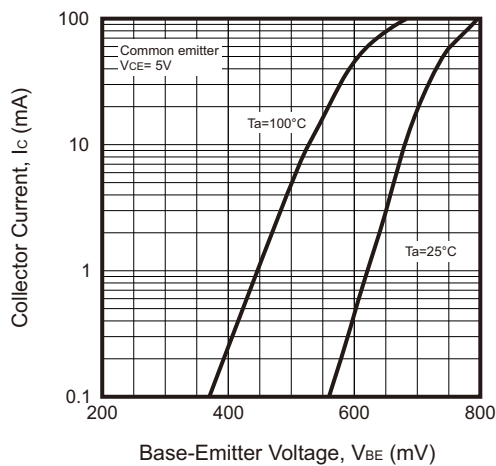
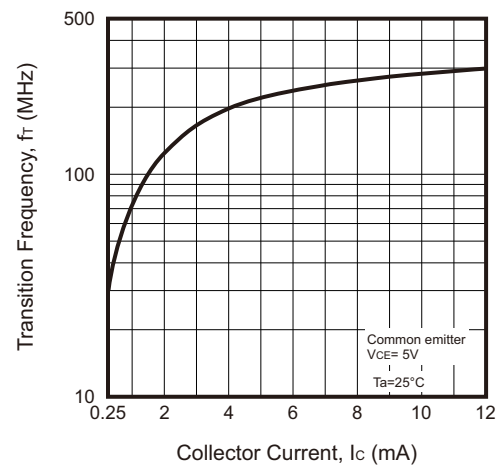


Fig.6 - f_T — I_C



(NPN) Typical Rating and Characteristic Curves (ABC847PN-HF)

Fig.7 - C_{ob}/C_{ib} — V_{CB}/V_{EB}

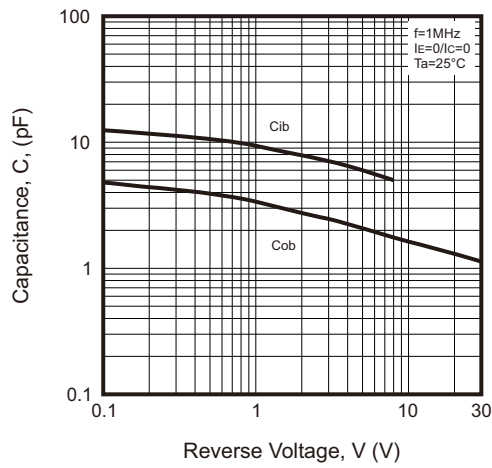
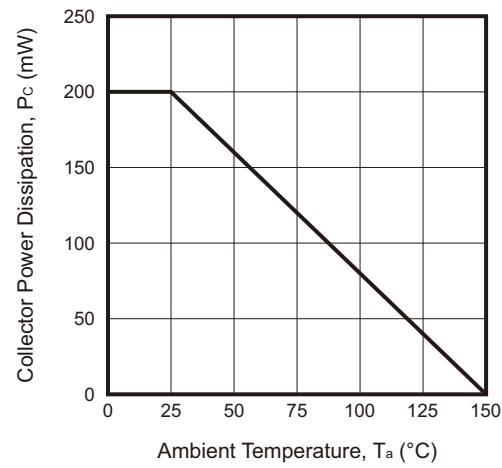


Fig.8 - P_c — T_a



(PNP) Typical Rating and Characteristic Curves (ABC847PN-HF)

Fig.9 - Static Characteristic

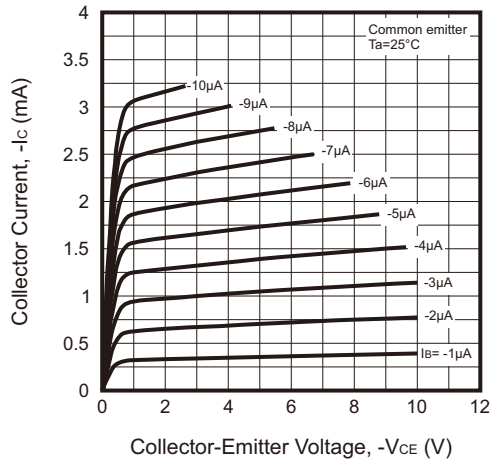


Fig.10 - h_{FE} — I_c

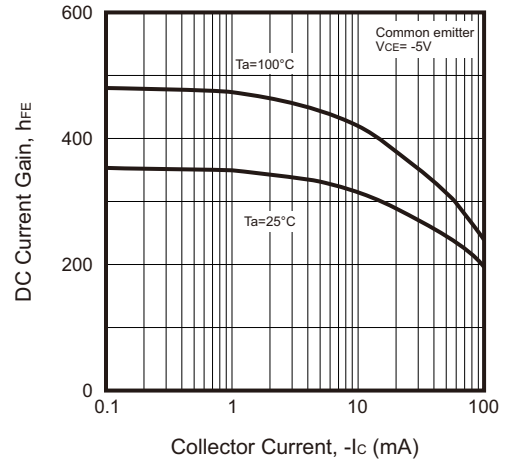


Fig.11 - V_{CEsat} — I_c

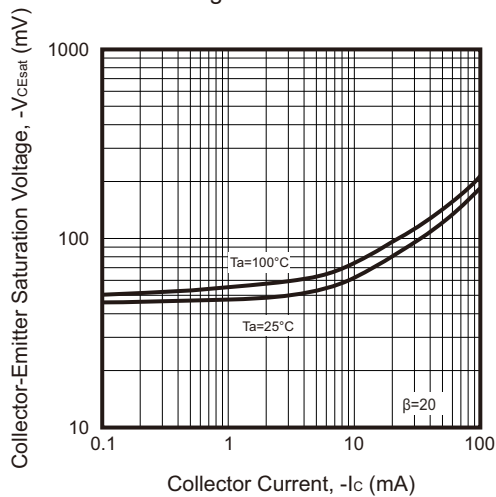


Fig.12 - V_{BEsat} — I_c

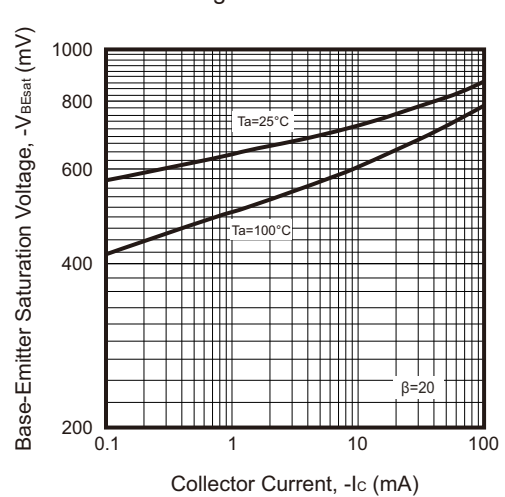


Fig.13 - I_c — V_{BE}

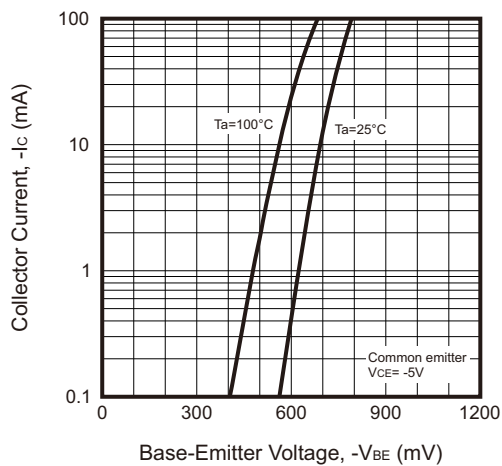
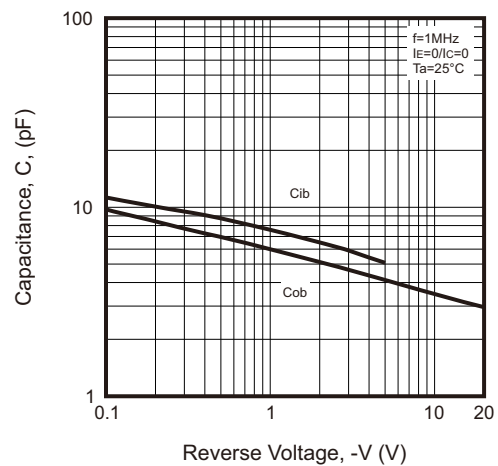


Fig.14 - C_{ob}/C_{ib} — V_{CB}/V_{EB}



(PNP) Typical Rating and Characteristic Curves (ABC847PN-HF)

Fig.15 - f_T — I_c

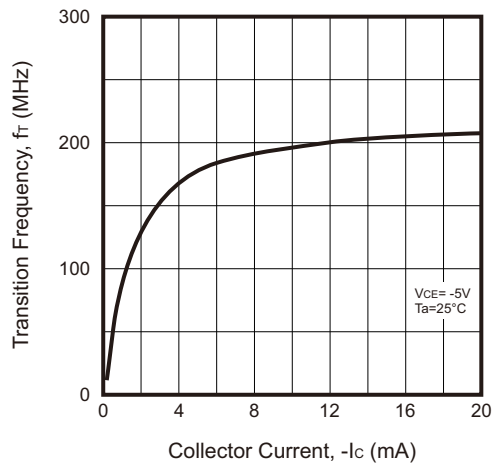
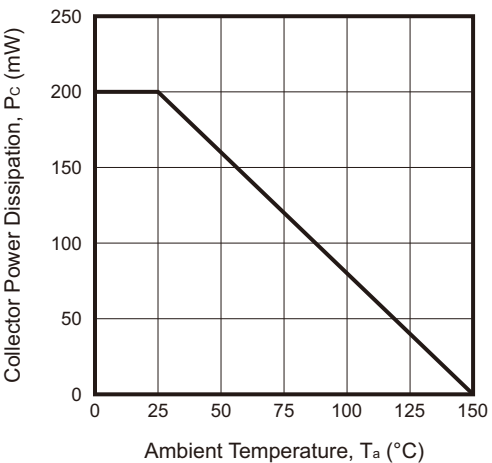
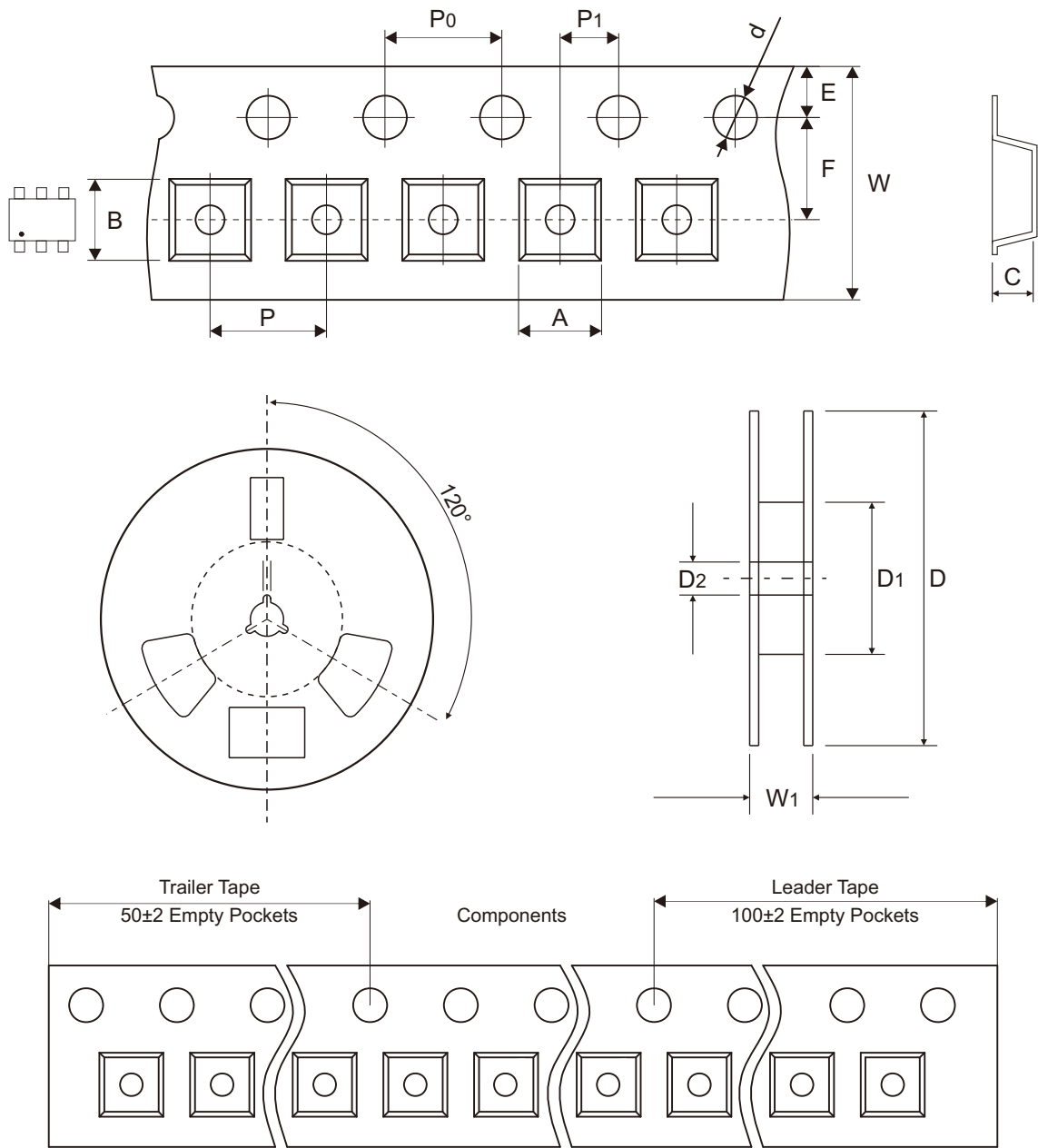


Fig.16 - P_c — T_a



Reel Taping Specification

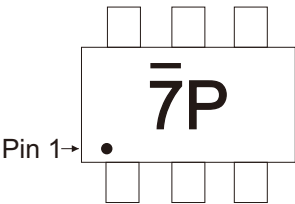


SOT-363	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	2.25 ± 0.13	2.55 ± 0.10	1.20 ± 0.10	1.50 + 0.10 - 0.00	178.00 ± 0.10	54.40 ± 0.40	13.00 ± 0.20
	(inch)	0.089 ± 0.005	0.100 ± 0.004	0.047 ± 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.004	2.142 ± 0.016	0.512 ± 0.008

SOT-363	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 + 0.30 - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 + 0.012 - 0.004	0.484 ± 0.039

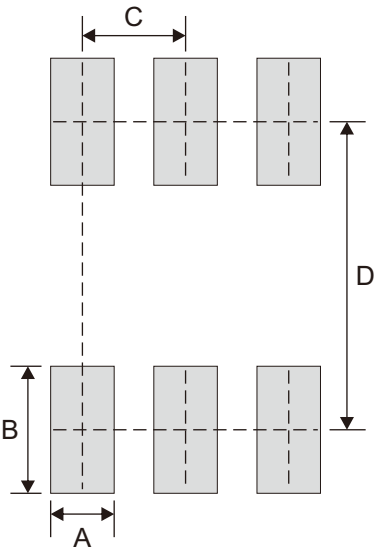
Marking Code

Part Number	Marking Code
ABC847PN-HF	7P



Suggested P.C.B. PAD Layout

SIZE	SOT-363	
	(mm)	(inch)
A	0.40	0.016
B	0.80	0.031
C	0.65	0.026
D	1.94	0.076



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-363	3,000	7