

GENERAL PURPOSE SMD NPN TRANSISTORS

DESCRIPTION

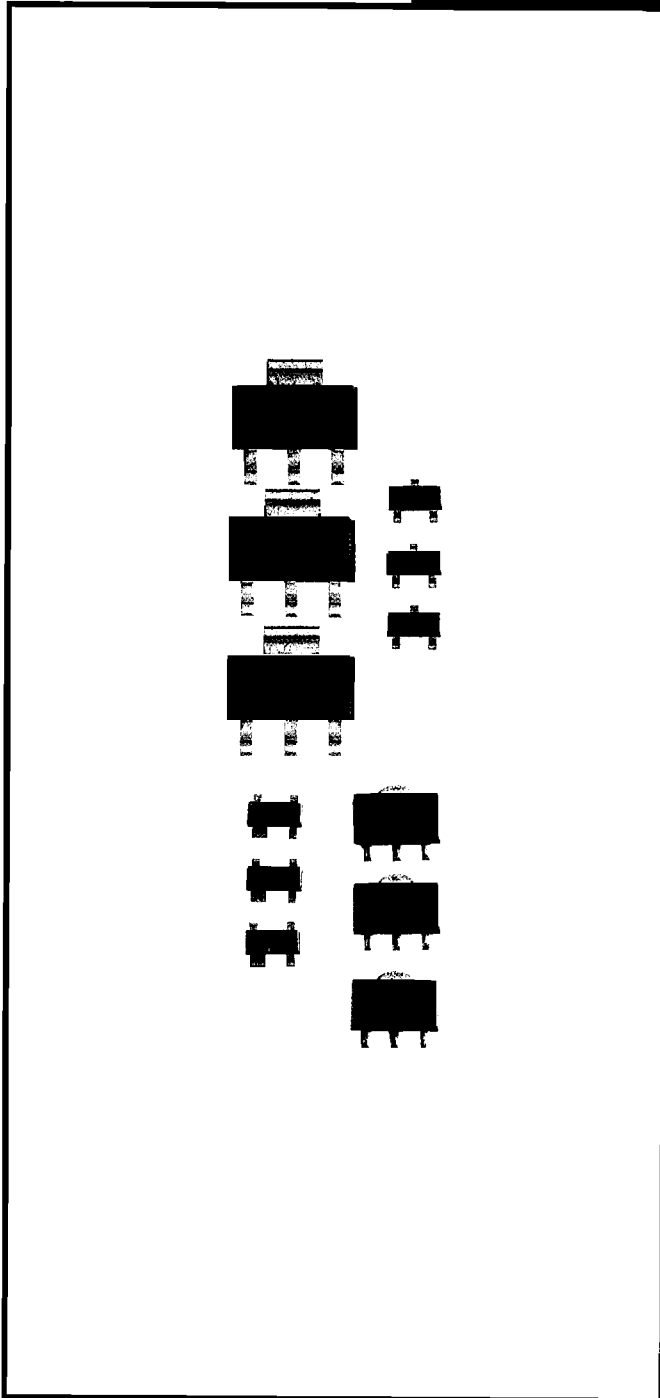
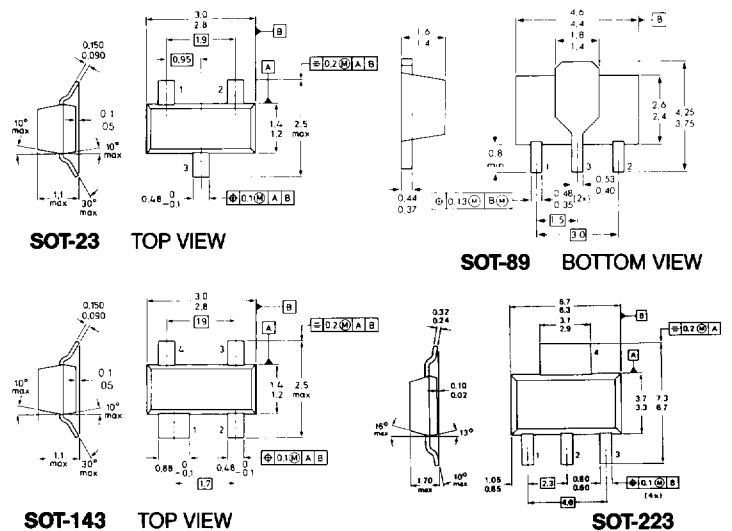
Philips Components general purpose transistors combine the highest quality standards with state-of-the-art production equipment to fulfill the need for generic, low-cost devices. These transistors provide a broad selection of current ratings, gains and saturation voltages to address a variety of circuit applications. They are offered in a choice of surface mount packages, providing the designer with alternatives for different power requirements, circuit board substrate materials, and assembly processing techniques.

FEATURES

- Continuous current ratings up to 1A
- Complementary NPN and PNP devices
- SOT-89 for medium power applications
- SOT-223 for 1W power at 60°C on printed circuit boards

MECHANICAL DATA

(Dimensions in mm)



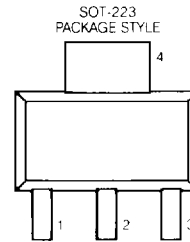
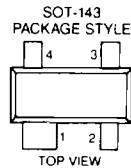
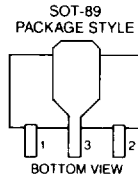
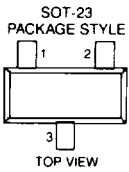
**GENERAL PURPOSE
SMD NPN TRANSISTORS**

ELECTRICAL SPECIFICATIONS

TYPE	PACKAGE	RATINGS			hFE		VCE(sat)		fT	PINOUT
		V _{CEO} V	V _{CBO} V	I _C mA	min./max. at I _C /V _{CE} mA/V		MAX. AT I _C /I _B V mA/mA	typ MHz		
NPN										
BC868	SOT-89	20	25	1000	85/375	500/1	0.50	1000/100	60	F
BCP68	SOT-223	20	25	1000	85/375	500/1	0.50	1000/100	60	R
BC818-16	SOT-23	25	25	500	100/250	100/1	0.62	500/50	100	F
BC818-25	SOT-23	25	25	500	160/400	100/1	0.62	500/50	100	F
BC818-40	SOT-23	25	25	500	250/600	100/1	0.62	500/50	100	F
BCX20	SOT-23	25	30	500	100/600	100/1	0.62	500/50	200	F
BC848A	SOT-23	30	30	200	110/220	2/5	0.25	10/0.5	300	F
BC848B	SOT-23	30	30	200	200/450	2/5	0.25	10/0.5	300	F
BC848C	SOT-23	30	30	200	420/800	2/5	0.25	10/0.5	300	F
BCV61	SOT-143	30	30	100	100/800	2/5	0.25	10/0.5	300	G
PMBT2222	SOT-23	30	60	600	100/300	150/10	0.4	150/15	>250	F
BCW31	SOT-23	32	32	100	110/220	2/5	0.25	10/0.5	300	F
BCW32	SOT-23	32	32	100	220/450	2/5	0.25	10/0.5	300	F
BCW33	SOT-23	32	32	100	420/800	2/5	0.25	10/0.5	300	F
BCW60A	SOT-23	32	32	200	120/220	2/5	0.35	10/0.25	250	F
BCW60B	SOT-23	32	32	200	180/2/5	2/5	0.35	10/0.25	250	F
BCW60C	SOT-23	32	32	200	250/460	2/5	0.35	10/0.25	250	F
BCW60D	SOT-23	32	32	200	380/630	2/5	0.35	10/0.25	250	F
PMBTA20	SOT-23	40	40	100	40/400	5/10	0.25	10/1	>125	F
PMBT3903	SOT-23	40	60	200	50/150	10/1	0.20	10/1	>250	F
PMBT3904	SOT-23	40	60	200	100/300	10/1	0.20	10/1	>300	F
PXT3904	SOT-89	40	60	200	100/300	10/1	0.20	10/1	>300	F
PXT4401	SOT-89	40	60	600	100/300	150/1	0.4	150/15	>250	F
PMBT2222A	SOT-23	40	75	600	100/300	150/10	0.3	150/15	>300	F
PXT2222A	SOT-89	40	75	600	100/300	150/10	0.3	150/15	>300	F
PZT2222A	SOT-223	40	75	600	100/300	150/10	0.3	150/15	>300	R
BC817-16	SOT-23	45	45	500	100/250	100/1	0.62	500/50	100	F
BC817-25	SOT-23	45	45	500	160/400	100/1	0.62	500/50	100	F
BC817-40	SOT-23	45	45	500	250/600	100/1	0.62	500/50	100	F
BCP54	SOT-223	45	45	1000	40/250	150/2	0.5	500/50	130	R
BCX54	SOT-89	45	45	1000	40/250	150/2	0.50	500/50	130	F
BCX70G	SOT-23	45	45	200	120/220	2/5	0.35	10/0.25	250	F
BCX70H	SOT-23	45	45	200	180/310	2/5	0.35	10/0.25	250	F
BCX70J	SOT-23	45	45	200	250/460	2/5	0.35	10/0.25	250	F
BCX70K	SOT-23	45	45	200	380/630	2/5	0.35	10/0.25	250	F
BC847A	SOT-23	45	50	200	110/220	2/5	0.25	10/0.5	300	F
BC847B	SOT-23	45	50	200	200/450	2/5	0.25	10/0.5	300	F
BC847C	SOT-23	45	50	200	420/800	2/5	0.25	10/0.5	300	F
BCW71	SOT-23	45	50	100	110/220	2/5	0.25	10/0.5	300	F
BCW72	SOT-23	45	50	100	200/450	2/5	0.25	10/0.5	300	F
BCW81	SOT-23	45	50	100	420/800	2/5	0.25	10/0.5	300	F
BCX19	SOT-23	45	50	500	100/600	100/1	0.62	500/50	200	F
BCP55	SOT-223	60	60	1000	40/250	150/2	0.5	500/50	130	R
BCX55	SOT-89	60	60	1000	40/250	150/2	0.50	500/50	130	F
PMBTA05	SOT-23	60	60	500	50/-	100/1	0.25	100/10	>100	F
BCV71	SOT-23	60	80	100	110/220	2/5	0.25	10/0.5	300	F
BCV72	SOT-23	60	80	100	200/450	2/5	0.25	10/0.5	300	F
BC846A	SOT-23	65	80	200	110/220	2/5	0.25	10/0.5	300	F
BC846B	SOT-23	65	80	200	200/450	2/5	0.25	10/0.5	300	F
BCP56	SOT-223	80	100	1000	40/250	150/2	0.5	500/50	130	R
BCX56	SOT-89	80	100	1000	120/220	2/5	0.50	500/50	130	F
PMBTA06	SOT-23	80	80	100	50/-	100/1	0.25	100/10	>100	F

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PINOUT DIAGRAMS



PINOUT F: SOT-23
PINOUT F: SOT-89
PINOUT G: SOT-143
PINOUT R: SOT-223

PIN 1	PIN 2	PIN 3	PIN 4
E	B	C	—
E	B	C	—
B,C ₂	C ₁	E ₁	E ₂
B	C	E	C

MARKING CODES

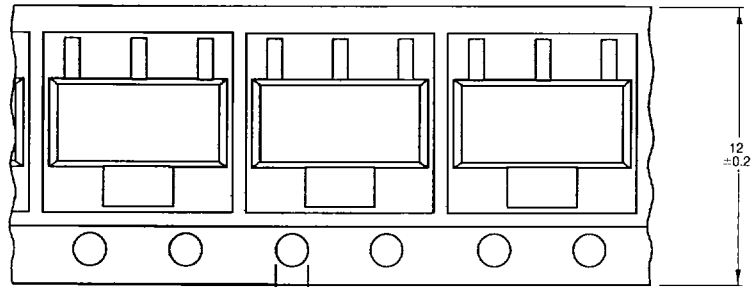
Type No.	Code	Type No.	Code	Type No.	Code	Type No.	Code
BC817-16	6A	BC848C	1L	BCW60B	AB	BCX70J	AJ
BC817-25	6B	BC868	CAC	BCW60C	AC	BCX70K	AK
BC817-40	6C	BCP54	*	BCW60D	AD	PMBT2222	1B
BC818-16	6E	BCP55	*	BCW71	K1	PMBT2222A	1P
BC818-25	6F	BCP56	*	BCW72	K2	PMBT3903	1Y
BC818-40	6G	BCP68	*	BCW81	K3	PMBT3904	1A
BC846A	1A	BCV61	D91	BCX19	U1	PMBTA05	1H
BC846B	1B	BCV71	K7	BCX20	U2	PMBTA06	1G
BC847A	1E	BCV72	K8	BCX54	BA	PMBTA20	1C
BC847B	1F	BCW31	D1	BCX55	BE	PXT2222A	P1P
BC847C	1G	BCW32	D2	BCX56	BH	PXT3904	P1A
BC848A	1J	BCW33	D3	BCX70G	AG	PXT4401	P2X
BC848B	1K	BCW60A	AA	BCX70H	AH	PZT2222A	*

*See individual device data sheet

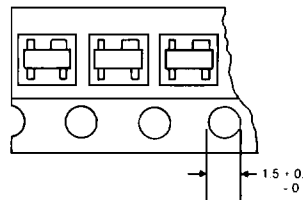
TAPE AND REEL SPECIFICATIONS

(Dimensions in mm)

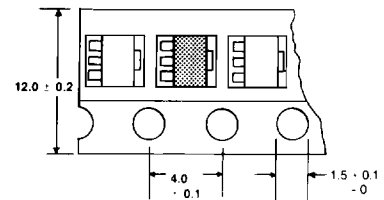
SM Package	Devices per reel	Reel Size (in)	Tape Width (mm)	Ordering Suffix
SOT-23	3K	7	8	TRL
	10K	13	8	TRL 13
SOT-89	1K	7	12	TRL
	4K	13	12	TRL 13
SOT-143	3K	7	8	TRL
	10K	13	8	TRL 13
SOT-223	1K	7	12	TRL
	4K	13	12	TRL 13



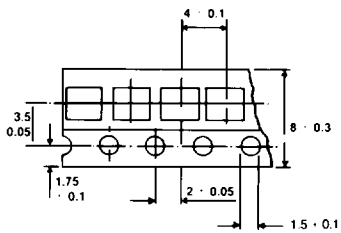
**SOT-223
TAPE DIMENSIONS
AND ORIENTATION**



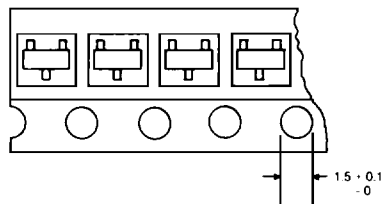
**SOT-143
ORIENTATION**



**SOT-89
TAPE DIMENSIONS
AND ORIENTATION**



**SOT-23 and SOT-143
TAPE DIMENSIONS**



**SOT-23
ORIENTATION**