

# Low voltage power bipolar transistors

## Selection guide



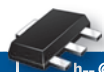
October 2007

## SOT-223



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
	STN749	25	35	3	1.6	100	300	1	2	0.6	3	300
STN878	STN888	30	45	5	1.6	100	300	0.5	1	0.35	2	50
STN724	STN826	30	60	3	1.4	80		1	2	0.4	1	50
STN690A	STN790A	30	40	3	1.6	100	400	0.5	2	0.35 (-0.5)	2	20
	2STN2540	40	40	5	1.6	150		2	2	0.2	2	200
	2STN1550	50	50	5	1.6	190 (typ)		2	2	0.25 (typ)	3	300
2STN1360	2STN2360	60	80(-60)	3	1.6	160	400	1	2	0.5	3	150
STN1802		60	80	3	1.6	100		3	2	0.4	3	150
STN851	STN951*	60	150 (-60)	5	1.6	150	350	2	1	0.5	5	200
STN715	STN817A	80	140 (-80)	1.5	1.6	40 (25)		1	2	0.5	1	100

## SOT-89



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
	2STF2220	20	20	1.5	1.4	120		1.5	2	0.45	1.5	150
STF724	STF826	30	60	3	1.4	80		1	2	0.4	1	50
2STF1340	2STF2340	40	40	3	1.4	150		3	2	0.39	3	150
2STF1550		50	50	5	1.4	190 (typ)	190 (typ)	2	2	0.25 (typ)	3	300
2STF1360	2STF2360	60	80 (-60)	3	1.4	160	400	1	2	0.5	3	150
STF715	STF817A	80	140 (-80)	1	1.4	40 (25)		1	2	0.5	1	100

## SOT23-3L



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
2STR1215	2STR2215	15	15	1.5	0.5	200	560	0.5	2	0.5	1	100
2STR1230	2STR2230	30	30	1.5	0.5	170 (180)	560	0.5	2	0.5 (-0.45)	1	100
2STR1160	2STR2160*	60	60	1	0.5	250 (typ)	250 (typ)	0.5	2	0.15 (typ)	0.5	50

## SOT23-6L



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
	STT818B	30	30	3	1.2	100		2.5	3	0.5	2	20

## DPAK and IPAK



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
STD724T4	STD826T4	30	60	3	15	100	300	0.1	2	0.4	1	50
	STD826-1	30	60	3	15	100	300	0.1	2	0.4	1	50
	STD790AT4	30	40	3	15	100	400	0.5	2	0.5	2	20
STD878T4	STD888T4	30	45	5	15	100	300	0.5	1	0.35	2	50
STD1805T4	STD2805T4*	60	150 (-60)	5	15	85		5	2	0.6	5	200
STD1805-1		60	150	5	15	85		5	2	0.6	5	200
STD1802T4		60	80	3	15	200	400	0.1	2	0.4	3	150
2STD1665T4		65	150	6	15	90		5	1	0.38	6	150

\* Coming soon Suffix "T4" = DPAK in tape and reel Suffix "-1" = IPAK in tubes

## Totem Pole (SO-8 double island)



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
STS01DTP06		30	60	3	1.6	100		1	2	0.7	2	100
STS05DTP03		30	45	5	1.6	100		3	2	0.7	3	100
STS01DTP08*		80	80	1.5	1.6	80		0.5	2	0.7	1	50

## TO-92 and TO-92L



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
2STX2220		20	20	1.5	0.9	120		1.5	2	0.45	1.5	150
STX724	STX826	30	60	3	0.9	80		1	2	0.4	1	50
STX690A	STX790A	30	40	3	0.9	100	400	0.5	2	0.35 (-0.5)	2	20
STX715	STX817A	80	140 (-80)	1	0.9	40 (25)		1	2	0.5	1	100
2STX1360		60	80	3	1	160	400	1	2	0.5	3	100
2STL1360 <sup>A</sup>		60	80	3	1.2	160	400	1	2	0.5	3	100
STSA1805		60	150	5	1.1	150	350	2	1	0.45	5	200
STSA851		60	150	5	1.1	85		5	2	0.4	3	150

<sup>A</sup>TO-92L

## SOT-32



Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
2SD882	2SB772	30	60	3	12.5	100	300	0.1	2	0.4	1	50
ST600K	ST631K	120	120	1	12.5	50		0.5	5	0.5	0.5	50

## TO-220FP (UL Compliant)



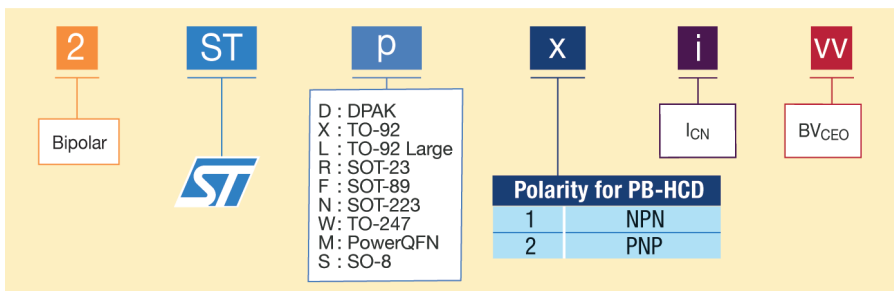
Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	$h_{FE} @$		$I_C$ [A]	$V_{CE}$ [V]	$V_{CE(sat)} @$ max [V]	$I_C$ [A]	$I_B$ [mA]
NPN	PNP					min	max					
2SD2012		60	60	3	25	100	320	0.5	5	1	2	200

## Application specific - Audio

Part number		$V_{CE0}$ [V]	$V_{CB0}$ $V_{CES}$ $V_{CEV}$ [V]	$I_C$ [A]	$P_{tot}$ [W]	Package	Application
NPN	PNP						
2ST5949*	2ST2121*	250	250	17	250	TO-3	Pro Audio
2STC5949*	2STA2121*	250	250	17	220	TO-264	Pro Audio
2STC5948*	2STA2120*	250	250	17	200	TO-3P	Pro Audio
2STC5242*	2STA1962*	230	230	15	130	TO-3P	Pro Audio
2STC5200*	2STA1943*	230	230	15	150	TO-264	Pro Audio
2STW4468	2STW1695	140	140	10	100	TO-247	Pro Audio
2STC4468	2STA1695	140	140	10	100	TO-3P	Pro Audio
2STC4467*	2STA1694*	120	120	8	80	TO-3P	Pro Audio
2STC2510*	2STA2510*	100	100	25	125	TO-3P	Pro Audio
TIP35C	TIP36C	100	100	25	125	TO-247	Car Booster
TIP35CW	TIP36CW	100	100	25	125	TO-247	Car Booster
2STW4466	2STW1693	80	80	6	60	TO-247	Pro Audio

\* Coming soon

## Ordering information



New PB-HCD low voltage power bipolar transistor nomenclature

## Cross reference

Competition p/n	ST Replacement	Package	Remarks	Competition p/n	ST Replacement	Package	Remarks
<b>ROHM</b>				<b>ZETEX</b>			
2SB1132	2STF2340	SOT-89		ZTX851	STSA851	TO-92	
2SB1182	STD888T4	DPAK	STD826	FZT851	STN851	SOT-223	
2SB1188	STF826	SOT-89	2STF2340	FCX589	2STF2340	SOT-89	
2SB1240	STX790A-AP	TO-92	Nearest	NZT560A	2STN1360	SOT-223	
2SB1443	STX790A-AP	TO-92		FMMT618	2STR1230	SOT-23	
2SD1664	STF724	SOT-89		FMMT718	2STR2230	SOT-23	
2SD1760	STD1802T4	DPAK		FZT651	2STN1360	SOT-223	
2SD1766	2STF1340	SOT-89		BCX68	STF715	SOT-89	
2SD1864	STSA1805	TO-92		BCX69	STF817A	SOT-89	
2SD2653	2STR1215	SOT23-3L		FCX491	STF715	SOT-89	
2SD2150	STF724	SOT-89		FCX493	STF715	SOT-89	
2SD1898	STX715	TO-92	Nearest	FCX591	STF817A	SOT-89	
2SB1424	STF826	SOT-89		FCX593	STF817A	SOT-89	
2SC4672	2STF1360	SOT-89		FZT1053A	STN851	SOT-223	
2SC5824	2STF1360	SOT-89		FZT1147A	STN888	SOT-223	
2SA1797	2STF2360	SOT-23		FZT489	STN715	SOT-223	
2SD2118	STD878T4	DPAK		FZT491	STN715	SOT-223	
2SB1197K	2STR2230	SOT23-3L		FZT493	STN715	SOT-223	
2SB1237	STX790A	TO-92		FZT591	STN817A	SOT-223	
2SB1689	2STR2215	SOT23-3L		FZT593	STN817A	SOT-223	
2SB1690	2STR2215	SOT23-3L		ZTX1049A	STSA851	TO-92	
2SB1709	2STR2215	SOT23-3L		ZTX1053A	STSA851	TO-92	
2SA2073	2STD2360	DPAK	DPAK upon request	ZTX450	STX715	TO-92	Central Collector
2SC5826	2STX1360	TO-92	different package	ZTX451	STX715	TO-92	Central Collector
2SD1859	STX715	TO-92	Nearest	ZTX452	STX715	TO-92	Central Collector
2SD2114K	2STR1215	SOT23-3L	2STR1230	ZTX551	STX817A	TO-92	Central Collector
2SD2144S	2STX1360-AP	TO-92	Ammopack version upon request	ZTX552	STX817A	TO-92	Central Collector
2SD2150	STF724	SOT-89					

Competition p/n	ST Replacement	Package	Remarks
<b>ZETEX</b>			
ZTX553	STX817A	T0-92	Central Collector
ZTX617	STSA1805	T0-92	
ZTX651	STX715	T0-92	Central Collector
ZTX652	STX715	T0-92	Central Collector
ZTX717	STX790A	T0-92	Central Collector
ZTX751	STX817A	T0-92	Central Collector
ZTX752	STX817A	T0-92	Central Collector
ZTX792A	STX790A	T0-92	Central Collector
FMMT549	2STR2130	SOT23-3L	
FMMT591A	2STR2160	SOT23-3L	
FMMT491	2STR1160	SOT23-3L	

<b>Fairchild</b>			
KSB564	2STX2230	T0-92	Nearest
KSC2982	STF724	SOT-89	
BCP56	BCP56-16	SOT-223	

<b>HITACI</b>			
2SB647	STX817A	T0-92	Nearest
2SB647A	STX817A	T0-92	Nearest
2SD468	2STX1230	T0-92	
2SD667	STX715	T0-92	Nearest
2SD667A	STX715	T0-92	Nearest

<b>HSMC</b>			
HJ772	STD826	DPAK	
HJ882	STD724	DPAK	
HA8050	STX690A	T0-92	Central collector PIN
HA8550	STX790A	T0-92	Central collector PIN
HSD882S	STX724	T0-92	Alternative 2STX690A
HSD667	STX715	T0-92	

<b>KEC</b>			
KTA1046	2SD2012	T0-220FP	
KTA1273	STX826	T0-92	
KTA1281	STX790A	T0-92	Nearest
KTB764	STX817A	T0-92	

Competition p/n	ST Replacement	Package	Remarks
<b>KEC</b>			
KTC2026	2SD2012	T0-220FP	
KTC3205	STX690A	T0-92	
KTB631K	ST631K	SOT-32	
KTD600K	ST600K	SOT-232	
KTC3209	2STL1360	T0-92 Large	
KTD863	STX715	T0-92	

<b>NEC</b>			
2SD1615	STF715	SOT-89	
2SD1950	STF724	SOT-89	
2SD882	2SD882	SOT-32	
2SB772	2SB772	SOT-32	

<b>SANYO</b>			
2SC5706	STD1805-1	IPAK	
2SD1802	STD1802T4	DPAK	
2SD1803	STD1805T4	DPAK	

<b>SHANTOU HUASHAN</b>			
H1020	STX790A	T0-92	Nearest
H1300	STX790A	T0-92	

<b>TOSHIBA</b>			
2SA1242	STD888T4	DPAK	
2SA1362	2STR2215	SOT23	
2SC2235	2STL1360	T0-92L	
2SA1939	2STW1693	T0-247	
2SC5196	2STW4466	T0-247	
2SC5198	2STC4468	T0-3P	2STW4468 (T0-247)
2SA1941	2STA1695	T0-3P	2STW1695 (T0-247)
2SA1943	2STA1943	T0-264	Coming soon
2SA1962	2STA1962	T0-3P	
2SC5242	2STC5242	T0-3P	
2SC5200	2STC5200	T0-264	Coming soon
2SD1415	2SD2012	T0220-FP	

<b>UTC</b>			
2SD1804	<b>STD1805-1</b>	IPAK	

<b>ONSEMI</b>			
MBT35200MT1G	STT818B	SOT23-6L	
MMJT9435T1G	STN790A	SOT-223	
MSD1328	2STR1230	SOT23-3L	

Competition p/n	ST Replacement	Package	Remarks	Competition p/n	ST Replacement	Package	Remarks
<b>NXP</b>				<b>SANKEN</b>			
2PD602AR	2STR1160	SOT23-3L		2SA1695	2STA1695	T0-3P	2STW1695 (T0-247)
PBSS4140T	2STR1160	SOT23-3L		2SC4468	2STC4468	T0-3P	2STW4468 (T0-247)
BCP69	STN826	SOT-223	Std product: BCP69	2SA1693	2STW1693	T0-247	
BCX56-10	STF715	SOT-89	Std product: BCX56-16	2SC4466	2STW4466	T0-247	
BCP53-16	STN817A	SOT-223		MN2510	2STC2510	T0-3P	
PBSS5520X	2STF2550	SOT-89	Coming soon	MP2510	2STA2510	T0-3P	
PBSS5350Z	2STF2360	SOT-89					
PBSS5540Z	2STN2540	SOT-223					



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