

Description

Philips Components surface mount range of FET's is the most extensive available, and offers low parasitic capacitance, negligible inductance, and reduced board assembly cost. The three categories of FET's each have its own attributes and applications:

Junction FET's (JFET's): Rugged and economical, able to withstand large transient voltages. Extremely high input impedance, low power consumption, and high dynamic range allow for application in all types of low voltage switching and amplification.

N-Channel MOSFET's: Available in both single and dual gate configurations. Single gate types are used for switches, choppers, and converters in telecommunications and industrial application. Dual gate devices are especially suitable for VHF/UHF antenna amplifier tuners.

Vertical DMOSFET's: Offer medium and high drain-source voltages and source currents. Interdigitated metallization geometries produce lower input capacitances and thus, faster switching times than other types of DMOSFET's. Ideally suited for higher current and voltage applications.

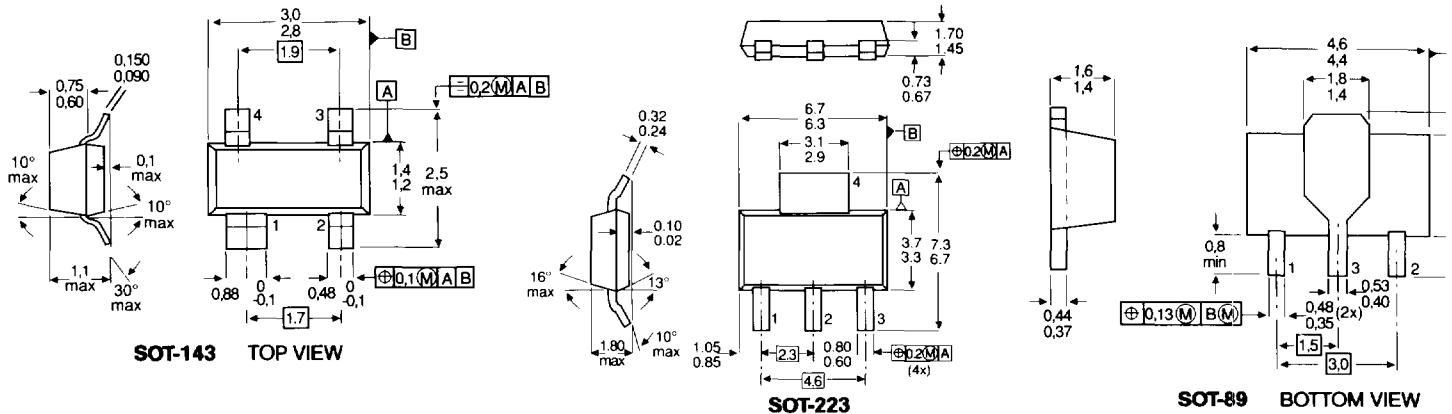
SMD® FET's

Features

- High input impedance
- Low power consumption
- High dynamic range
- N and P-Channel polarities

Mechanical Data

(Dimensions in mm)



Electrical Specifications

J FET's

Type	Package	Ratings		rDS (on) Max. Ω	-IDSS Min./Max. mA	-V(p)GS Max. V	Crs Max. pF	Pinout
		VDS V	VGSO V					
N-Channel								
BF510	SOT-23	20	—	—	.07/3.0	0.8	0.4	B
BF511	SOT-23	20	—	—	2.5/7.0	1.5	0.4	B
BF512	SOT-23	20	—	—	6/12	2.2	0.4	B
BF513	SOT-23	20	—	—	10/18	3	0.4	B
BF545A/0	SOT-23	30	—	—	0.5/2.1	—	1.1 typ.	A
BF545A	SOT-23	30	—	—	2/6.5	—	1.1 typ.	A
BF545B	SOT-23	30	—	—	6/15	—	1.1 typ.	A
BF545C	SOT-23	30	—	—	12/25	—	1.1 typ.	A
BFR30	SOT-23	25	25	—	4/10	5	1.5	A
BFR31	SOT-23	25	25	—	1/5	2.5	1.5	A
BFT46	SOT-23	25	25	—	0.2/1.5	1.0	1.5	A
PMBFJ108	SOT-23	25	25	8	80/—	10	15	A
PMBFJ109	SOT-23	25	25	12	40/—	6	15	A
PMBFJ110	SOT-23	25	25	18	10/—	4	15	A
PZPJ108	SOT-223	25	25	8	80/—	10	15	A
PZPJ109	SOT-223	25	25	12	40/—	6	15	A
PZPJ110	SOT-223	25	25	18	10/—	4	15	A
PMBFJ308	SOT-23	25	—	—	12/60	—	2.5 typ.	A
PMBFJ309	SOT-23	25	—	—	12/30	—	2.5 typ.	A
PMBFJ310	SOT-23	25	—	—	24/60	—	2.5 typ.	A
PMBF4416	SOT-23	30	—	—	5/15	—	0.8 typ.	A
BFR101A*	SOT-143	30	30	—	0.2/1.5	1.0	—	C
BFR101B*	SOT-143	30	30	—	1/5	2.5	—	C
BSR56	SOT-23	40	40	25	50/—	10	5	A
BSR57	SOT-23	40	40	40	20/100	6	5	A
BSR58	SOT-23	40	40	60	8/80	4	5	A
PMBF4391	SOT-23	40	40	30	50/150	4-10	3.5	A
PMBF4392	SOT-23	40	40	60	25/75	2-5	3.5	A
PMBF4393	SOT-23	40	40	100	5/30	0.53	3.5	A
PMBFJ111	SOT-23	40	40	30	20/—	10	3 typ.	A
PMBFJ112	SOT-23	40	40	50	5/—	5	3 typ.	A
PMBFJ113	SOT-23	40	40	100	2/—	3	3 typ.	A
P-Channel								
PMBFJ174	SOT-23	30	30	85	20/135	10	4 typ.	A
PMBFJ175	SOT-23	30	30	125	7/70	6	4 typ.	A
PMBFJ176	SOT-23	30	30	250	2/35	4	4 typ.	A
PMBFJ177	SOT-23	30	30	300	1.5/20	2.25	4 typ.	A

MOSFET's

Type	Package	Mode	Ratings		gFS (Typ) mA/V	V(p)GS Max. V	rDS (on) Max. ID/VGS		Pinout
			VDS V	ID mA			Ω	mA/V	
N-Channel									
BSD20*	SOT-143	Dp1	10	50	15	-2.0	30	1/10	C
BSS83*	SOT-143	Enh	10	50	15	2.0	45	0.1/10	C
BSD22*	SOT-143	Dp1	20	50	15	-2.0	30	1/10	C

*Includes integrated back-to-back diodes to protect against excessive input voltages.

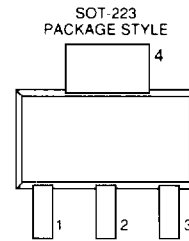
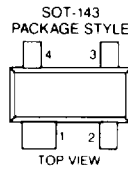
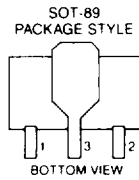
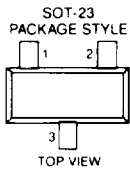
Dual Gate MOSFET's

Type	Package	Ratings		NF Typ dB	-I _{GSS} Max. nA	I _{DSS} Min./Max. mA	-V _{(P)GS} Max. V	Y _{fs} Min. mAV	C _{rs} Typ pF	Pinout
		V _{DS} V	I _D mA							
N-Channel										
BF998	SOT-143	12	30	0.6	50	4/20	2.0	21	.025	E
BF990	SOT-143	18	30	2.8	—	—	1.3	17	0.25	E
BF990A	SOT-143	18	—	2	—	—	1.3	18 Min	25	E
BF991	SOT-143	20	20	0.7	50	4/25	2.5	10	0.20	E
BF989	SOT-143	20	30	2.8	50	2/20	2.7	9.5	0.25	E
BF992	SOT-143	20	40	1.2	25	—	1.3	20	.04	E
BF994S	SOT-143	20	40	1.2	25	—	1.3	20	.04	E
BF996S	SOT-143	20	40	1.2	25	—	1.3	20	.04	E
BF997	SOT-143	20	30	1.0	50	2/20	2.0	15	.025	E

Vertical DMOS FET's

Type	Package	Ratings			Y _{FS} (Typ) mAV	V _{GS(TH)} V	R _{DS(on)} Max. at I _D /V _{GS}		Pinout
		V _{DS} V	V _{GS} V	I _D mA			Ω	mAV	
N-Channel									
BSP103	SOT-223	35	20	750	170	0.8-2.0	5	300/5	T
BSN20	SOT-23	50	20	100	60	2.0	15	100/10	D
2N7002	SOT-23	60	40	180	200	0.8-3.0	5	500/10	D
BSP105	SOT-223	60	20	500	170	0.8-2.0	5	300/5	T
BSP106	SOT-223	60	15	500	200	0.8-3.0	5	200/10	T
BSP108	SOT-223	80	20	500	300	1.5-3.5	3	500/10	T
BSP110	SOT-223	80	20	325	150	0.8-2.8	7	200/10	T
BST80	SOT-89	80	20	400	300	1.5-3.5	4	500/10	D
BST82	SOT-23	80	20	175	150	1.6-3.5	10	150/5	D
BSP109	SOT-223	90	20	500	170	0.8-2.0	5.3	300/5	T
BST86	SOT-89	180	20	300	250	0.7-2.7	10	15/3	D
BST84	SOT-89	200	20	250	250	0.8-2.8	12	250/10	D
BSP107	SOT-223	200	20	200	180	0.8-2.4	28	20/2.6	T
BSP128	SOT-223	200	20	350	400	0.4-1.8	8	100/2.8	T
BSP120	SOT-223	200	20	250	250	0.8-2.8	12	250/10	T
BSP121	SOT-223	200	20	300	350	0.8-2.8	6	400/10	T
BSP122	SOT-223	200	—	650	800	1.0-3.0	2	1500/10	T
BSP126	SOT-223	250	20	300	400	0.8-2.0	6	300/10	T
P-Channel									
BSP205	SOT-223	50	20	250	150	1.5-3.5	10	200/10	T
BST122	SOT-89	50	20	250	125	1.5-3.5	6	200/10	D
BST120	SOT-89	60	20	300	200	1.5-3.5	10	200/10	D
BSP206	SOT-223	60	20	300	200	1.5-3.5	6	200/10	T
BSP220	SOT-223	200	20	250	200	0.8-2.24	12	200/10	T
BSS192	SOT-89	200	20	150	200	0.8-2.8	20	200/10	D
BSP225	SOT-223	250	20	250	200	0.8-2.8	15	200/10	T

Pinout Diagrams



	PIN 1	PIN 2	PIN 3	PIN 4
PINOUT A: SOT-23	S	D	G	—
PINOUT B: SOT-23	D	G	S	—
PINOUT C: SOT-143	S	Sub.	D	G
PINOUT D: SOT-23	S	G	D	—
PINOUT D: SOT-89	S	G	D	—
PINOUT E: SOT-143	S	D	G ₂	G ₁
PINOUT T: SOT-223	G	D	S	D

Marking Codes

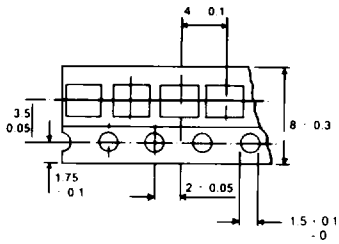
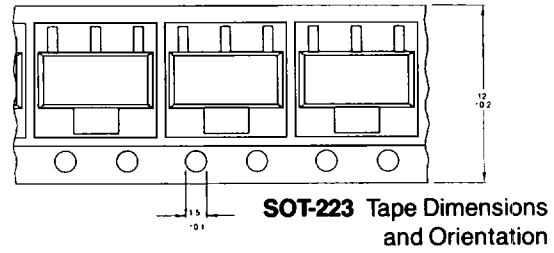
Type No.	Code	Type No.	Code	Type No.	Code	Type No.	Code
BF510	S6p	BFR30	M1p	BSP122	*	PMBF109	p09
BF511	S7p	BFR31	M2p	BSP126	*	PMBF110	p10
BF512	S8p	BFR101A	M97	BSP128	*	PMBF111	p11
BF513	S9p	BFR101B	M98	BSP205		PMBF112	p12
BF545A/0	*	BFT46	M3p	BSP206		PMBF113	p13
BF545A	*	BSD20	M31	BSP220	*	PMBF174	p6X
BF545B	*	BSD22	M32	BSP225	*	PMBF175	p6W
BF545C	*	BSN20	M8p	BSR56	M4p	PMBF176	p6S
BF989	MAp	BSP103	*	BSR57	M5p	PMBF177	p6Y
BF990	M90	BSP105	*	BSR58	M6p	PMBF308	M08
BF990A	M87	BSP106	*	BSS83	M74	PMBF309	M09
BF991	M91	BSP107	*	BSS192	*	PMBF310	M10
BF992	M92	BSP108	*	PMBF4416	*	PZPJ108	ZFJ108
BF994S	MGp	BSP109	*	PMBF4391	p6J	PZPJ109	ZFJ109
BF996S	MHp	BSP110	*	PMBF4392	p6K	PZPJ110	ZFJ110
BF997	MKp	BSP120	*	PMBF4393	p6G	2N7002	702
BF998	MOp	BSP121	*	PMBFJ108	p08		

*See individual device data sheet.

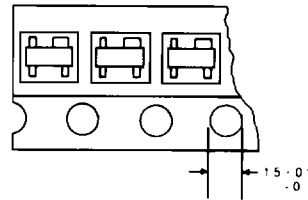
Tape and Reel Specifications

(Dimensions in mm)

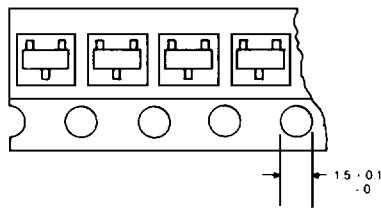
SM Package	Devices per Reel	Reel Size (in)	Tape Width (mm)	Ordering Suffix
SOT-23	3K	7	8	TRL
	10K	13	8	TRL 13
SOT-89	1K	7	12	TRL
	4K	13	12	TRL 13
SOT-143	3K	7	8	TRL
	10K	13	8	TRL 13
SOT-223	1K	7	12	TRL
	4K	13	12	TRL 13



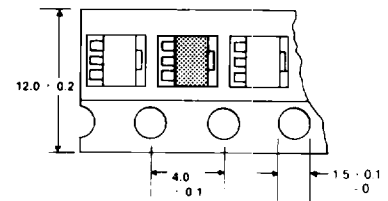
SOT-23 and SOT-143
Tape Dimensions



SOT-143
Orientation



SOT-23
Orientation



SOT-89
Tape Dimensions and Orientation