

# Germanium Transistors

	Type No.	Case	Construction (see note 1)	Maximum Ratings at 25°C amb.					Characteristics									SPECIAL FEATURES
				V <sub>CB</sub> V	V <sub>CE</sub> V	V <sub>EB</sub> V	I <sub>C</sub> A	P <sub>tot</sub> W	h <sub>FE</sub>			f <sub>T</sub>		V <sub>CE(SAT)</sub>				
									I <sub>C</sub> A	Min.	Max.	I <sub>C</sub> A	Min. Mc/s	I <sub>C</sub> A	I <sub>B</sub> A	Max. V		
<b>PNP Medium Power</b>	2N524	TO5	A	-45	-30	-15	0.5	0.225	0.1	23	—	0.001	0.8	—	0.002	0.13		
	2N525	TO5	A	-45	-30	-15	0.5	0.225	0.1	30	—	0.001	1.0	—	0.002	0.13		
	2N526	TO5	A	-45	-30	-15	0.5	0.225	0.1	47	—	0.001	1.3	—	0.002	0.13		
	2N527	TO5	A	-45	-30	-15	0.5	0.225	0.1	65	—	0.001	1.5	—	0.002	0.03		
	2N1141		DM	-35	—	-1.0	0.1	0.75	0.01	10	—	0.01	400	0.05	0.01	2		
	2N1142		DM	-30	—	-0.7	0.1	0.75	0.01	10	—	0.01	310	0.05	0.01	2		
	2N1143		DM	-25	—	-0.5	0.1	0.75	0.01	10	—	0.01	250	0.05	0.01	2		
<b>PNP High Power</b>	2N456A	TO3	A	-40	-40	-20	7	150†	-5	30	90	-1	±0.43	-5	-0.5	-0.5		
	2N457A	TO3	A	-60	-60	-20	7	150†	-5	30	90	-1	±0.43	-5	-0.5	-0.5		
	2N458A	TO3	A	-80	-80	-20	7	150†	-5	30	90	-1	±0.43	-5	-0.5	-0.5		
	2N511	MD4	A	-40	-40	-30	10	80†	-10	10	—	-1	±0.26	-10	-1.5	-0.5	≡ 2G220	
	2N511A	MD4	A	-60	-60	-30	10	80†	-10	10	—	-1	±0.26	-10	-1.5	-0.5	≡ 2G221	
	2N511B	MD4	A	-80	-80	-30	10	80†	-10	10	—	-1	±0.26	-10	-1.5	-0.5	≡ 2G222	
	2N512	MD4	A	-40	-40	-30	15	80†	-15	10	—	-1	±0.28	-15	-2.25	-0.75	≡ 2G223	
	2N512A	MD4	A	-60	-60	-30	15	80†	-15	10	—	-1	±0.28	-15	-2.25	-0.75	≡ 2G224	
	2N512B	MD4	A	-80	-80	-30	15	80†	-15	10	—	-1	±0.28	-15	-2.25	-0.75	≡ 2G225	
	2N513	MD4	A	-40	-40	-30	20	80†	-20	10	—	-1	±0.3	-20	-3.0	-1.25	≡ 2G226	
	2N513A	MD4	A	-60	-60	-30	20	80†	-20	10	—	-1	±0.3	-20	-3.0	-1.25	≡ 2G227	
	2N513B	MD4	A	-80	-80	-30	20	80†	-20	10	—	-1	±0.3	-20	-3.0	-1.25	≡ 2G228	
	2N514	MD4	A	-40	-40	-30	25	80†	-25	10	—	-1	±0.43	-25	-3.75	-1.25	≡ 2G229	
	2N514A	MD4	A	-60	-60	-30	25	80†	-25	10	—	-1	±0.43	-25	-3.75	-1.25	≡ 2G230	
	2N514B	MD4	A	-80	-80	-30	25	80†	-25	10	—	-1	±0.43	-25	-3.75	-1.25	≡ 2G231	
	2N1021	TO3	A	-100	-100	-20	7	150†	-5	30	90	-1	±0.43	-5	-0.5	-0.5		
	2N1022	TO3	A	-120	-120	-20	7	150†	-5	30	90	-1	±0.43	-5	-0.5	-0.5		
	2N1046	TO3	AD	-100	-50	-20	20	50†	-5	60	200	0.5A	20	-5	-0.5	-0.4		
	2N1907	TO3	AD	-100	-100	-1.5	20	150†	-15	10	—	-1	20	-15	-1.5	-1.0		
	2N1908	TO3	AD	-130	-130	-1.5	20	150†	-15	10	—	-1	20	-15	-1.5	-1.0		
	T13027	TO3	A	-45	-40	-20	7	150†	-3	40	250	-1	0.2	-3	-0.3	-0.5		
	T13028	TO3	A	-60	-50	-20	7	150†	-3	40	250	-1	0.2	-3	-0.3	-0.5		
	T13029	TO3	A	-30	-55	-20	7	150†	-3	40	250	-1	0.2	-3	-0.3	-0.5		
	T13030	TO3	A	-100	-60	-20	7	150†	-3	40	250	-1	0.2	-3	-0.3	-0.5		
	T13031	TO3	A	-120	-65	-20	7	150†	-3	40	250	-1	0.2	-3	-0.3	-0.5		

NOTE 1: The following symbols have been used throughout the Product Summary:

Under "Construction":

A — Alloyed  
D — Diffused  
E — Epitaxial  
G — Grown  
M — Mesa  
P — Planar

Under h<sub>FE</sub>:

\* — h<sub>FE</sub>

Under f<sub>T</sub>:

φ — f<sub>hfb</sub>  
Δ — f<sub>hfe</sub>  
‡ — typical

Under Dissipation:

† — dissipation at T<sub>case</sub> = 25°C

The transistor types tabulated in pp 7-17 form the Texas Instruments Limited Preferred and Guidance list for new designs. In addition, the types listed overleaf are readily available. Omission of a type from the Preferred list does not imply that a limit has been set to the production life.