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2N2060,A
2N2223,A
2N2480,A

DUAL
AMPLIFIER TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	2N2060,A 2N2223,A	2N2480	2N2480A	Unit
Collector-Emitter Voltage	V_{CEO}	60	40	40	Vdc
Collector-Emitter Voltage	V_{CER}	80	—	—	Vdc
Collector-Base Voltage	V_{CBO}	100	75	80	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	5.0	5.0	Vdc
Collector Current — Continuous	I_C	500			mAdc
		One Die	All Die Equal Power		
Total Device Dissipation @ T_A = 25°C	P_D				mW
2N2060,A		0.5	0.6		
2N2223,A		0.5	0.6		
2N2480,A		0.3	0.6		
Derate above 25°C					mW/°C
2N2060,A		2.86	3.43		
2N2223,A		2.86	3.43		
2N2480,A		1.72	3.43		
Total Device Dissipation @ T_C = 25°C	P_D				Watts
2N2060,A		1.5	3.0		
2N2223,A		1.6	3.0		
2N2480,A		1.0	2.0		
Derate above 25°C					mW/°C
2N2060,A		8.6	17.2		
2N2223,A		9.1	11.4		
2N2480,A		5.7	11.4		
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200			°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1) (I_C = 100 mAdc, R_{BE} ≤ 10 ohms)	2N2060, 2N2060A, 2N2223, 2N2223A	$V_{CER(sus)}$	80	—	Vdc
Collector-Emitter Sustaining Voltage(1)		$V_{CEO(sus)}$			Vdc
(I_C = 20 mAdc, I_B = 0)	2N2480		40	—	
	2N2480A		40	—	
(I_C = 30 mAdc, I_B = 0)	2N2060, 2N2060A, 2N2223, 2N2223A		60	—	
				—	
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$			Vdc
(I_C = 100 μAdc, I_E = 0)	2N2060, 2N2060A, 2N2223, 2N2223A		100	—	
	2N2480*		75	—	
	2N2480A*		80	—	
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$			Vdc
(I_E = 100 μAdc, I_C = 0)	2N2060, 2N2060A, 2N2223, 2N2223A		7.0	—	
	2N2480, 2N2480A		5.0	—	
Collector Cutoff Current		I_{CBO}			μAdc
(V_{CB} = 30 Vdc, I_E = 0, T_A = 150°C)	2N2480, 2N2480A		—	15	
(V_{CB} = 60 Vdc, I_E = 0)	2N2480		—	0.050	
	2N2480A		—	0.020	
(V_{CB} = 80 Vdc, I_E = 0)	2N2060, 2N2060A		—	0.002	
	2N2223, 2N2223A		—	0.010	
(V_{CB} = 80 Vdc, I_E = 0, T_A = 150°C)	2N2060, 2N2060A		—	10	
	2N2223, 2N2223A		—	15	
Emitter Cutoff Current		I_{EBO}			nAdc
(V_{BE} = 5.0 Vdc, I_C = 0)	2N2060, 2N2060A		—	2.0	
	2N2223, 2N2223A		—	10	
	2N2480		—	50	
	2N2480A		—	20	