

2N 4234 · 2N 4237 2N 4235 · 2N 4238

COMPLEMENTARY SILICON AF MEDIUM POWER AMPLIFIERS & SWITCHES

THE 2N4234, 2N4235 (PNP) AND 2N4237, 2N4238 (NPN) ARE COMPLEMENTARY SILICON PLANAR EPITAXIAL TRANSISTORS FOR USE IN AF MEDIUM POWER DRIVERS AND OUTPUTS, AS WELL AS FOR SWITCHING APPLICATIONS ABOVE 1 AMPERE. THEY FEATURE LOW COLLECTOR-EMITTER SATURATION VOLTAGE (0.6V MAX @ $I_C=1A$).

CASE TO-39



ABSOLUTE MAXIMUM RATINGS	For p-n-p devices, voltage and current values are negative.	(PNP)	(PNP)	(NPN)	(NPN)
		2N4234	2N4235	2N4237	2N4238
Collector-Base Voltage	V_{CBO}	40V	60V	50V	80V
Collector-Emitter Voltage	V_{CEO}	40V	60V	40V	60V
Emitter-Base Voltage	V_{EBO}	7V	7V	6V	6V
Collector Current	I_C	3A	3A	3A**	3A**
Total Power Dissipation ($T_C \leq 25^\circ C$) ($T_A \leq 25^\circ C$)	P_{tot}	$\leftarrow 6W, \text{ derate } 34mW/^\circ C \text{ above } 25^\circ C \rightarrow$ $\leftarrow 1W, \text{ derate } 5.7mW/^\circ C \text{ above } 25^\circ C \rightarrow$			
Operating Junction & Storage Temperature	T_j, T_{stg}	-65 to 200 $^\circ C$			

** 1A in JEDEC Registration

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector-Emitter Breakdown Voltage 2N4234, 2N4237 2N4235, 2N4238	V_{CEO}^*	40		60	V	$I_C=100mA$ $I_B=0$
Collector Cutoff Current 2N4234 2N4235 2N4237 2N4238	I_{CEV}		0.1		mA	$V_{CE}=40V$ $V_{EB}=1.5V$ $V_{CE}=60V$ $V_{EB}=1.5V$ $V_{CE}=45V$ $V_{EB}=1.5V$ $V_{CE}=75V$ $V_{EB}=1.5V$
Collector Cutoff Current 2N4234 2N4235 2N4237 2N4238	I_{CEV}		1		mA	$V_{CE}=30V$ $V_{EB}=1.5V$ $T_A=150^\circ C$ $V_{CE}=40V$ $V_{EB}=1.5V$ $T_A=150^\circ C$ $V_{CE}=30V$ $V_{EB}=1.5V$ $T_A=150^\circ C$ $V_{CE}=50V$ $V_{EB}=1.5V$ $T_A=150^\circ C$
Collector Cutoff Current	I_{CBO}		0.1		mA	$V_{CB}=V_{CBO}$ $I_E=0$

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PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CEO}			1	mA	$V_{CE}=30V$ $I_B=0$
		2N4234		1	mA	$V_{CE}=40V$ $I_B=0$
		2N4235		0.7	mA	$V_{CE}=40V$ $I_B=0$
		2N4237		0.7	mA	$V_{CE}=60V$ $I_B=0$
2N4238						
Emitter Cutoff Current	I_{EBO}			0.5	mA	$V_{EB}=V_{EBO}$ $I_C=0$
Collector-Emitter Saturation Voltage 2N4234, 2N4235 only	$V_{CE(sat)}^*$		0.35	0.6	V	$I_C=1A$ $I_B=125mA$
Collector-Emitter Saturation Voltage 2N4237, 2N4238 only	$V_{CE(sat)}^*$		0.18	0.3	V	$I_C=500mA$ $I_B=50mA$
			0.35	0.6	V	$I_C=1A$ $I_B=0.1A$
Base-Emitter Saturation Voltage	$V_{BE(sat)}^*$		1.0	1.5	V	$I_C=1A$ $I_B=0.1A$
Base-Emitter Voltage	V_{BE}^*		0.78	1.0	V	$I_C=250mA$ $V_{CE}=1V$
D.C. Current Gain 2N4234, 2N4235 only	H_{FE}^*	40				$I_C=100mA$ $V_{CE}=1V$
		30		150		$I_C=250mA$ $V_{CE}=1V$
		20				$I_C=500mA$ $V_{CE}=1V$
		10				$I_C=1A$ $V_{CE}=1V$
D.C. Current Gain 2N4237, 2N4238 only	H_{FE}^*	30				$I_C=50mA$ $V_{CE}=1V$
		30		150		$I_C=250mA$ $V_{CE}=1V$
		30				$I_C=500mA$ $V_{CE}=1V$
		15				$I_C=1A$ $V_{CE}=1V$
Current Gain-Bandwidth Product 2N4234, 2N4235 2N4237, 2N4238	f_T	3	70		MHz	$I_C=100mA$ $V_{CE}=10V$
		2	70		MHz	$I_C=100mA$ $V_{CE}=10V$
Collector-Base Capacitance	C_{ob}			100	pF	$V_{CB}=10V$ $I_E=0$ $f=100KHz$
Small Signal Current Gain 2N4234, 2N4235 2N4237, 2N4238	h_{fe}	25				$I_C=50mA$ $V_{CE}=10V$ $f=1KHz$
		30				$I_C=100mA$ $V_{CE}=10V$ $f=1KHz$

* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%

