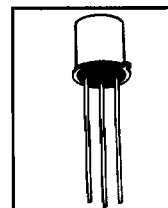


TYPES 2N339 THRU 2N343 N-P-N GROWN-JUNCTION SILICON TRANSISTORS

BULLETIN NO. DLS 733955, JUNE 1963—REVISED MARCH 1973

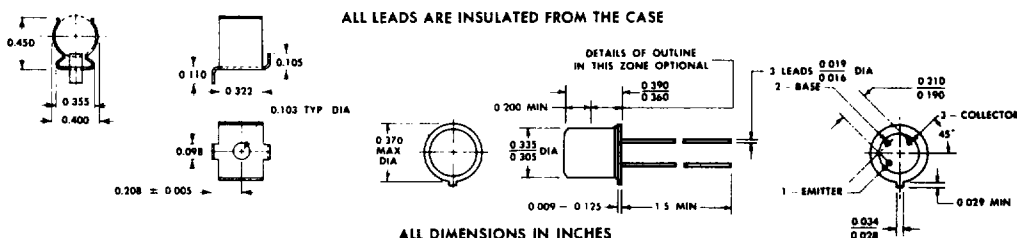
1 Watt at 25°C Case Temperature
Designed for
Audio and Servo Amplifier Applications



mechanical data

The transistor is in an welded package with glass-to-metal hermetic seal between case and leads. Unit weight is approximately 1.5 grams.*JEDEC TO-11.

A non-insulated mounting clip (TI P/N 10-31-052-006) is provided with each transistor. Material is beryllium copper, cadmium plated—gold iridited.



absolute maximum ratings at 25°C case temperature (unless otherwise noted)

*Collector Current	60 ma
*Total Device Dissipation (see note 1)	1000 mw
*Total Device Dissipation at 100°C Case Temperature (see note 1)	400 mw
*Total Device Dissipation at 125°C Case Temperature (see note 1)	200 mw
*Storage and Operating Collector Junction Temperature Range	-65° to +150°C
Storage and Operating Collector Junction Temperature Range (TI Guarantee)	-65° to +175°C

*electrical characteristics at 25°C case temperature (unless otherwise noted)

parameter	test conditions	2N339		2N340		2N341		2N342		2N343		unit
		min	max	min	max	min	max	min	max	min	max	
I_{CBO}	Collector Cutoff Current	$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		μa
I_{CBO}	Collector Cutoff Current	$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		$V_{CB} = 30 \text{ v}$ $I_E = 0$		μa
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 50 \mu\text{a}$ $I_E = 0$		$I_C = 50 \mu\text{a}$ $I_E = 0$		$I_C = 50 \mu\text{a}$ $I_E = 0$		$I_C = 50 \mu\text{a}$ $I_E = 0$		$I_C = 50 \mu\text{a}$ $I_E = 0$		v
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 100 \mu\text{a}$ $I_B = 0$		$I_C = 100 \mu\text{a}$ $I_B = 0$		$I_C = 100 \mu\text{a}$ $I_B = 0$		$I_C = 100 \mu\text{a}$ $I_B = 0$		$I_C = 100 \mu\text{a}$ $I_B = 0$		v
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 100 \mu\text{a}$ $I_C = 0$		$I_E = 100 \mu\text{a}$ $I_C = 0$		$I_E = 100 \mu\text{a}$ $I_C = 0$		$I_E = 100 \mu\text{a}$ $I_C = 0$		$I_E = 100 \mu\text{a}$ $I_C = 0$		v
$r_{CE(sat)}$	DC Collector-Emitter Saturation Resistance	$I_B = 3 \text{ ma}$ $I_C = 20 \text{ ma}$		$I_B = 3 \text{ ma}$ $I_C = 20 \text{ ma}$		$I_B = 3 \text{ ma}$ $I_C = 20 \text{ ma}$		$I_B = 3 \text{ ma}$ $I_C = 20 \text{ ma}$		$I_B = 3 \text{ ma}$ $I_C = 20 \text{ ma}$		ohm
h_{fb}	AC Common-Base Forward Current Transfer Ratio	$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		
h_{ib}	AC Common-Base Input Impedance	$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		ohm
h_{ob}	AC Common-Base Output Admittance	$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		μmho
h_{rb}	AC Common-Base Reverse Voltage Transfer Ratio	$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		$V_{CB} = 10 \text{ v}$ $I_E = -5 \text{ ma}$ $f = 1 \text{ kc}$		

NOTE 1: For increased dissipation capability (at elevated temperature) guaranteed by Texas Instruments, see Dissipation Derating Curve on page 2.

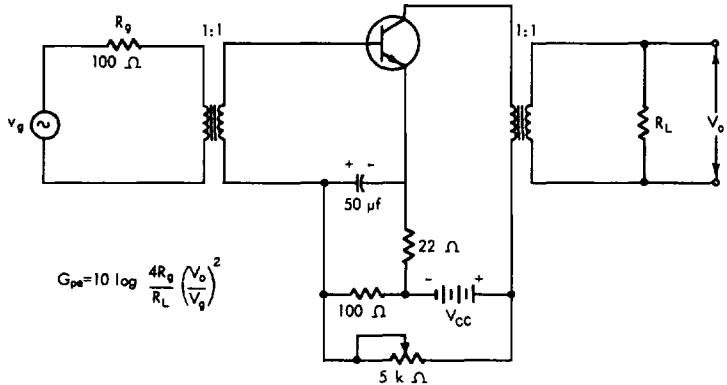
*Indicates JEDEC registered data

TYPES 2N339 THRU 2N343 **N-P-N GROWN-JUNCTION SILICON TRANSISTORS**

*functional tests at 25°C case temperature

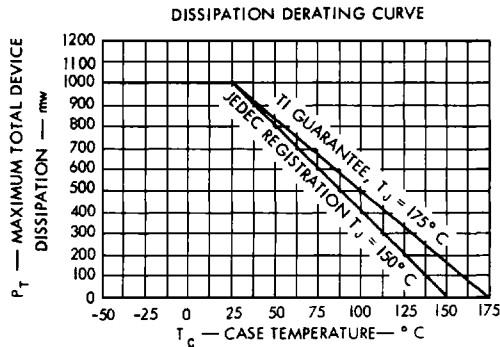
parameter	test conditions	type	min	typ	max	unit
G _{pe} Common-Emitter Power Gain	V _{CE} = 28 v; I _C = 20 ma; R _L = 1 k Ω; f = 1 kc V _g = 0.2 v	2N339 2N342 2N343	30			db
	V _{CE} = 45 v; I _C = 15 ma; R _L = 2 k Ω; f = 1 kc V _g = 0.2 v	2N340	30			db
	V _{CE} = 67.5 v; I _C = 10 ma R _L = 4 k Ω; f = 1 kc V _g = 0.2 v	2N341	30			db

POWER GAIN TEST CIRCUIT



*Indicates JEDEC registered data

THERMAL CHARACTERISTICS



0258354 ADVANCED SEMICONDUCTOR
SILICON ADVANCED SEMICONDUCTOR
TRANSISTORS

82D 00039 D T-29-01
 82 DE 0258354 0000039 ?

DEVICE TYPE NO.	POLARITY	P _D @ T _C = 25°C	MAXIMUM RATINGS				ELECTRICAL CHARACTERISTICS				CASE
		WATTS	I _C AMPS	BV _{CBO}	BV _{CE}	BV _{EBO}	h _{FE} MIN.	I _C AMPS	V _{CE}	f *KHZ	
2N329A	PNP	.386	.050	50	30	20		.003	5	*500	T039
2N332	NPN	.150	.025	45	20	1	9	.001	5	4	T05
2N333	NPN	.150	.025	45	20	1	18	.001	5	5	T05
2N334	NPN	.150	.025	45	20	1	18	.001	5	8	T05
2N335	NPN	.150	.025	45	20	1	37	.001	5	6	T05
2N336	NPN	.150	.025	45	20	1	78	.001	5	7	T05
2N337	NPN	.125	.020	45	20	1	20	.010	5	20	T05
2N338	NPN	.125	.020	45	20	1	45	.010	5	30	T05
2N339	NPN	1.00	.020	55	55	1	9	.005	10	10	T039
2N340	NPN	1.00	.020	85	85	1	9	.005	10	10	T039
2N341	NPN	1.00	.020	125	85	1	9	.005	10	10	T039
2N342	NPN	1.00	.020	60	60	1	9	.005	10	10	T039
2N343	NPN	1.00	.020	60	60	1	29	.005	10	10	T039
2N478	NPN	.200	.025	15	15	2	40	.001	5	20	T05
2N479	NPN	.200	.025	30	30	2	4	.001	5	20	T05
2N479A	NPN	.200	.025	30	30	2	40	.001	5	20	T05
2N480	NPN	.200	.025	45	45	2	40	.001	5	20	T05
2N480A	NPN	.200	.025	45	45	2	40	.001	5	20	T05
2N541	NPN	.200	.025	15	15	2	80	.001	5	10	T05
2N542	NPN	.200	.025	30	30	2	80	.001	5	10	T05
2N543	NPN	.200	.025	50	50	2	80	.001	5	10	T05
2N545	NPN	.600	.800	60	60	6	15	.500	6	2	T05
2N546	NPN	.600	.800	30	30	6	15	.500	6	2	T05
2N547	NPN	.600	.800	60	60	6	20	.500	6	4	T05
2N548	NPN	.600	.800	30	30	6	20	.500	6	4	T05
2N549	NPN	.600	.800	60	60	6	20	.200	6	4	T05
2N550	NPN	.600	.800	30	30	6	20	.200	6	4	T05
2N560	NPN	.500	.100	60	60	8	20	.100	5	20	T05
2N656	NPN	4.00	.500	60	60	8	30	.200	10	50	T05
2N657	NPN	4.00	.500	100	100	8	30	.200	10	60	T05
2N697	NPN	.600	.500	60	40	5	40	.150	10	50	T05
2N697A	NPN	.800	1.00	60	35	5	25	.001	5	50	T05
2N699	NPN	.600	.500	120	80	5	40	.150	10	50	T05
2N699A	NPN	.800	.500	120	80	5	40	.150	10	50	T05
2N702	NPN	.300	.050	25	25	5	20	.010	5	150	T018
2N703	NPN	.300	.050	25	25	5	40	.010	5	150	T018
2N707	NPN	.300	.100	56	28	4	12	.010	1	400	T018
2N707A	NPN	.500	.100	70	40	5	9	.010	1	70	T018
2N709A	NPN	.360	.100	50	20	5	40	.010	1	800	T018
2N718	NPN	.400	.400	60	40	5	40	.150	10	50	T018
2N721	PNP	.400	.200	50	35	5	20	.150	10	50	T018
2N722	PNP	.400	.200	50	35	5	20	.150	10	60	T018
2N722A	PNP	.400	.200	50	35	5	30	.150	10	96	T018
2N727	PNP	.300	.050	25	20	5	30	.010	1	150	T018
2N784	NPN	.300	.200	30	15	5	25	.010	1	200	T018
2N784A	NPN	.360	.200	40	20	5	25	.010	1	300	T018
2N917	NPN	.200	.050	30	15	3	20	.003	1	500	T072
2N918	NPN	.200	.050	30	15	3	20	.003	1	600	T072
2N919	NPN	.360	.220	25	15	5	20	.010	1	200	T018
2N920	NPN	.360	.220	25	15	5	40	.010	1	200	T018
2N921	NPN	.360	.200	50	20	5	20	.010	10	400	T018
2N922	NPN	.360	.200	50	20	5	40	.010	10	400	T018
2N929	NPN	.300	.030	45	45	5	60	.001	5	30	T018
2N930	NPN	.300	.030	45	45	5	15	.001	5	30	T018
2N957	NPN	.250	.100	40	20	5	45	.010	5	200	T018
2N988	NPN	.300	.220	20	10	3	20	.010	1	300	T018
2N995	PNP	.360	.100	20	15	4	35	.020	1	100	T018
2N995A	PNP	.360	.100	20	15	4	35	.020	1	100	T018
2N996	PNP	.360	.100	15	12	4	35	.020	1	160	T018
2N1069	NPN	50.0	4.00	60	45	9	10	1.50	4	1.2	T03
2N1070	NPN	50.0	4.00	60	45	9	10	1.50	4	1.2	T03
2N1132A	PNP	.600	.600	60	40	5	25	.001	5	60	T039
2N1132B	PNP	.600	.600	70	45	6	25	.001	5	60	T039
2N1335	NPN	.800	.300	120	90	4	10	.030	10	70	T039