TYPES A5T5058, A5T5059
N-P-N SILICON TRANSISTORS

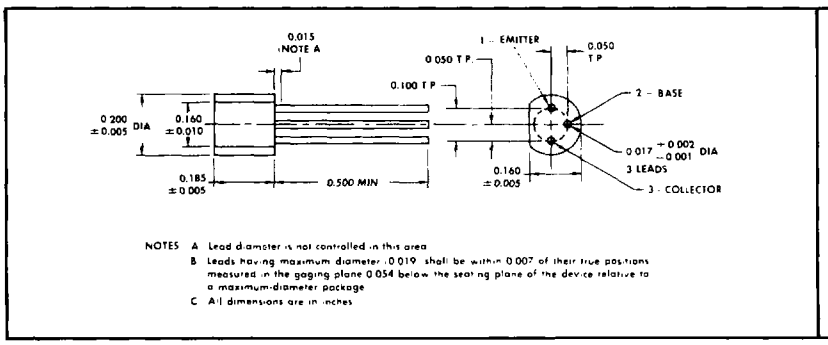
BULLETIN NO. DL-S 7011322, MAY 1970

HIGH-VOLTAGE SILECT† TRANSISTORS‡ FOR GENERAL PURPOSE AMPLIFIER APPLICATIONS IN LINE-OPERATED CIRCUITS

- Solid-State Relays
- High-Voltage Inverters
- Voltage Regulators
- High-Voltage Indicator and Display Controls

mechanical data

These transistors are encapsulated in a plastic compound specifically designed for this purpose, using a highly mechanized process developed by Texas Instruments. The case will withstand soldering temperatures without deformation. These devices exhibit stable characteristics under high-humidity conditions and are capable of meeting MIL-STD-202C, Method 106B. The transistors are insensitive to light.



absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)

	A5T5058	A5T5059
Collector-Base Voltage	300 V	250 V
Collector-Emitter Voltage (See Note 1)	300 V	250 V
Emitter-Base Voltage	7 V	6 V
Continuous Collector Current	150 mA	
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 2)	800 mW	
Continuous Device Dissipation at (or below) 25°C Lead Temperature (See Note 3)	1.25 W	
Continuous Device Dissipation at (or below) 25°C Case-and-Lead Temperature (See Note 4)	1.6 W	
Storage Temperature Range	−65°C to 150°C	
Lead Temperature 1/16 Inch from Case for 10 Seconds	260°C	

NOTES: 1. These values apply between 0 and 30 mA collector current when the base-emitter diode is open-circuited.
2. Derate linearly to 150°C free-air temperature at the rate of 6.4 mW/°C.
3. Derate linearly to 150°C lead temperature at the rate of 10 mW/°C. Lead temperature is measured on the collector lead 1/16 inch from the case.
4. This rating applies with the entire case (including the leads) maintained at 25°C. Derate linearly to 150°C case-and-lead temperature at the rate of 12.8 mW/°C.

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‡U.S. Patent No. 3,439,238

USES CHIP N15

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electrical characteristics at 25°C free-air temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS			A5T5058 MIN	A5T5058 MAX	A5T5059 MIN	A5T5059 MAX	UNIT
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 μA,	I_E = 0		300		250		V
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 30 mA,	I_B = 0,	See Note 5	300		250		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100 μA,	I_C = 0		7		6		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 100 V,	I_E = 0			50		50	nA
		V_{CB} = 100 V,	I_E = 0,	T_A = 75°C		2		2	μA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 5 V,	I_C = 0			10		10	nA
h_{FE}	Static Forward Current Transfer Ratio	V_{CE} = 25 V,	I_C = 5 mA	See Note 5	10		10		
		V_{CE} = 25 V,	I_C = 30 mA		35	150	30	150	
		V_{CE} = 25 V,	I_C = 100 mA		35		30		
		V_{CE} = 25 V,	I_C = 30 mA, T_A = −55°C		10				
V_{BE}	Base-Emitter Voltage	V_{CE} = 25 V,	I_C = 30 mA	See Note 5		0.82		0.82	V
		I_B = 3 mA,	I_C = 30 mA			0.85		0.85	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_B = 3 mA,	I_C = 30 mA,	See Note 5		1		1	V
$\lvert h_{fe} \rvert$	Small-Signal Common-Emitter Forward Current Transfer Ratio	V_{CE} = 25 V,	I_C = 10 mA,	f = 20 MHz	1.5	8	1.5	8	
C_{cb}	Collector-Base Capacitance	V_{CB} = 10 V,	I_E = 0,	f = 1 MHz, See Note 6		10		10	pF
C_{eb}	Emitter-Base Capacitance	V_{EB} = 0.5 V,	I_C = 0,	f = 1 MHz, See Note 6		75		75	pF

NOTES: 5. These parameters must be measured using pulse techniques. t_w = 300 μs, duty cycle ≤ 2%.

6. C_{cb} and C_{eb} measurements employ a three-terminal capacitance bridge incorporating a guard circuit. The third electrode (emitter or collector, respectively) is connected to the guard terminal of the bridge.

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THERMAL INFORMATION

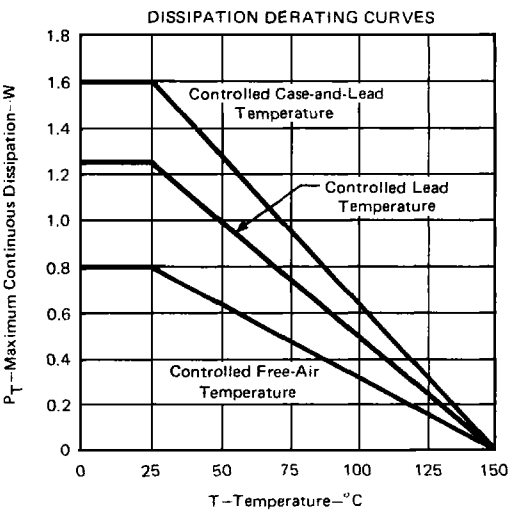

FIGURE 1

TEXAS INSTRUMENTS
INCORPORATED
POST OFFICE BOX 5012 • DALLAS, TEXAS 75222