

Soliton DEVICES, INC.

TRANSISTOR DIVISION

1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

	↓	↓	↓
	TO-3	TO-66	TO-39
	SDT 85301	SDT 85601	SDT 85501
	SDT 85302	SDT 85602	SDT 85502
	SDT 85303	SDT 85603	SDT 85503
	SDT 85304	SDT 85604	SDT 85504
	SDT 85305	SDT 85605	SDT 85505
	SDT 85306	SDT 85606	SDT 85506
	SDT 85307	SDT 85607	SDT 85507
	SDT 85308	SDT 85608	SDT 85508
	SDT 85309	SDT 85609	SDT 85509
	SDT 85310	SDT 85610	SDT 85510

} h_{FE}
> 40

} h_{FE}
> 20

10 AMP

SILICON NPN POWER TRANSISTORS

DESIGNED-IN ADVANTAGES

GREATER GAIN STABILITY — planar fabrication techniques give these new Solitron transistors unusually consistent gain, even across a wide range of currents. Gain is flat from below 10 milliamps to above 5 amps.

MINIMUM LONG-TERM DRIFT — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

FAST SWITCHING — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents. $f_T = 40$ MHz typical.

ABSOLUTE MAXIMUM RATINGS

SDT	85301, 85306	85302, 85307	85303, 85308	85304, 85309	85305, 85310	TO-3 TO-66 TO-39
	85601, 85606	85602, 85607	85603, 85608	85604, 85609	85605, 85610	
	85501, 85506	85502, 85507	85503, 85508	85504, 85509	85505, 85510	
BV_{CBO} ...	60 V	80 V	100 V	140 V	170 V	
BV_{CEO} ...	40 V	60 V	80 V	120 V	150 V	
BV_{EBO} ...	8 V	8 V	8 V	8 V	8 V	
I_C	10 A	10 A	10 A	10 A	10 A	
I_B	1 A	1 A	1 A	1 A	1 A	
T_J	_____ -55°C to 200°C _____					
T_s	_____ -55°C to 200°C _____					
	TO-3	TO-66	TO-39			
θ_{J-C}	1.5°C/Watt	2.5°C/Watt	20°C/Watt			

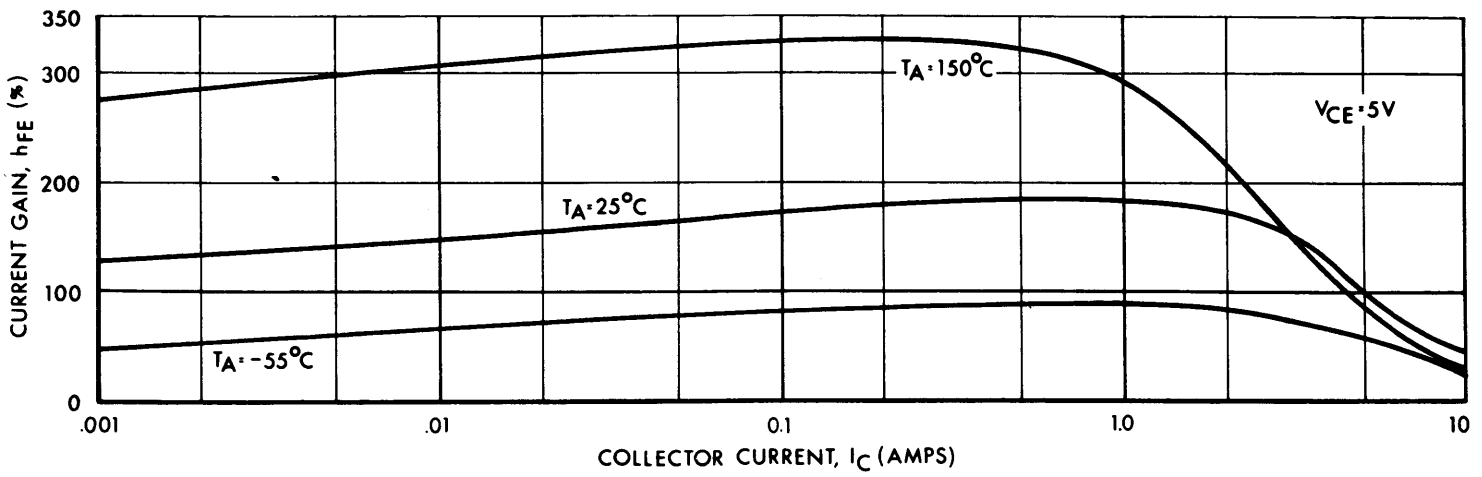
ELECTRICAL CHARACTERISTICS

 $T_c = 25^{\circ}\text{C}$ unless otherwise noted

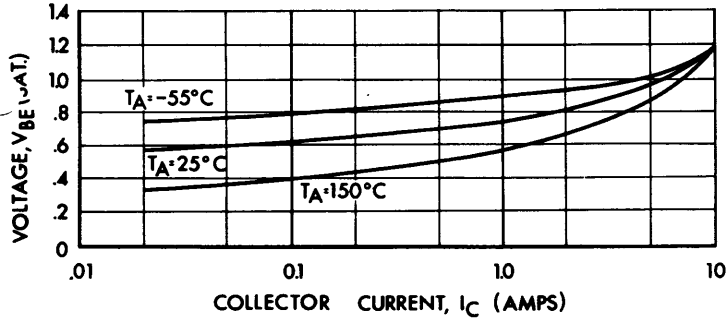
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	DEVICE TYPE
BV_{EBO}	8.0		V	$I_E = 10 \mu\text{A}$	ALL
I_{CBO}		5.0	μA	$V_{CB} = 30 \text{ V}$	SDT 85301, 85601, 85501 SDT 85306, 85606, 85506
		5.0	μA	$V_{CB} = 40 \text{ V}$	SDT 85302, 85602, 85502 SDT 85307, 85607, 85507
		5.0	μA	$V_{CB} = 60 \text{ V}$	SDT 85303, 85603, 85503 SDT 85308, 85608, 85508
		5.0	μA	$V_{CB} = 100 \text{ V}$	SDT 85304, 85604, 85504 SDT 85309, 85609, 85509
		5.0	μA	$V_{CB} = 130 \text{ V}$	SDT 85305, 85605, 85505 SDT 85310, 85610, 85510
BV_{CBO}	60		V	$I_c = 10 \mu\text{A}$	SDT 85301, 85601, 85501 SDT 85306, 85606, 85506
	80		V	$I_c = 10 \mu\text{A}$	SDT 85302, 85602, 85502 SDT 85307, 85607, 85507
	100		V	$I_c = 10 \mu\text{A}$	SDT 85303, 85603, 85503 SDT 85308, 85608, 85508
	140		V	$I_c = 10 \mu\text{A}$	SDT 85304, 85604, 85504 SDT 85309, 85609, 85509
	170		V	$I_c = 10 \mu\text{A}$	SDT 85305, 85605, 85505 SDT 85310, 85610, 85510
* $BV_{CEO}(\text{sus})$	40		V	$I_c = 100 \text{ mA}$	SDT 85301, 85601, 85501 SDT 85306, 85606, 85506
	60		V	$I_c = 100 \text{ mA}$	SDT 85302, 85602, 85502 SDT 85307, 85607, 85507
	80		V	$I_c = 100 \text{ mA}$	SDT 85303, 85603, 85503 SDT 85308, 85608, 85508
	120		V	$I_c = 100 \text{ mA}$	SDT 85304, 85604, 85504 SDT 85309, 85609, 85509
	150		V	$I_c = 100 \text{ mA}$	SDT 85305, 85605, 85505 SDT 85310, 85610, 85510
* h_{FE}	40	120		$I_c = 5\text{A}, V_{CE} = 5\text{V}$	SDT 85301-305 SDT 85601-605 SDT 85501-505
	20			$I_c = 5\text{A}, V_{CE} = 5\text{V}$	SDT 85306-310 SDT 85606-610 SDT 85506-510
* $V_{CE}(\text{sat})$.6	V	$I_c = 5\text{A}, I_b = .5\text{A}$	ALL
* $V_{BE}(\text{sat})$		1.5	V	$I_c = 5\text{A}, I_b = .5\text{A}$	ALL
f_t	40		Typ.	$I_c = 1\text{A}, V_{CE} = 10\text{V}$	ALL
C_{OB}		350	pf	$V_{CB} = 10\text{V}, f = 1 \text{ MHz}$	ALL

*Pulse width $\leq 300 \mu\text{sec}$, Duty cycle $\leq 2\%$

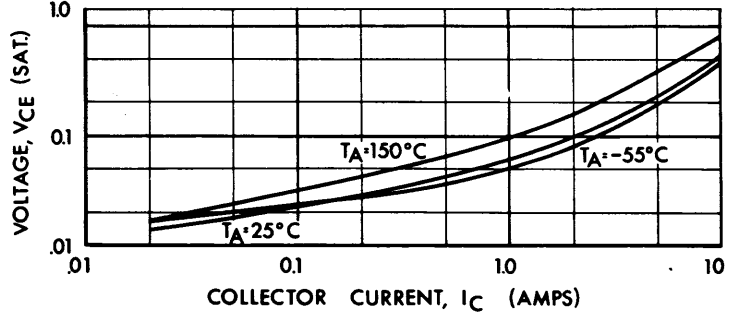
NORMALIZED CURRENT GAIN



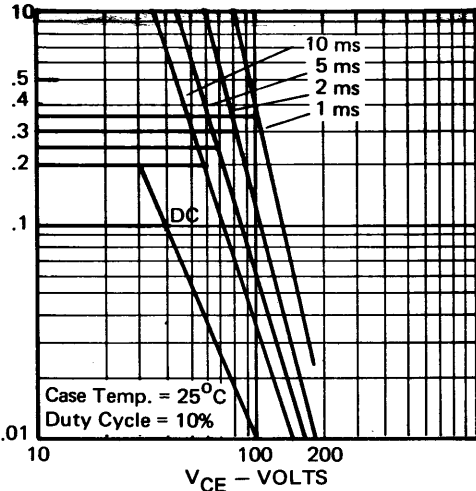
BASE TO EMITTER SATURATION VOLTAGE



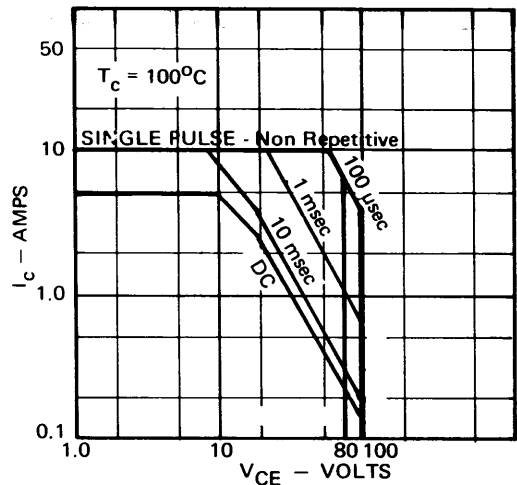
COLLECTOR TO EMITTER SATURATION VOLTAGE



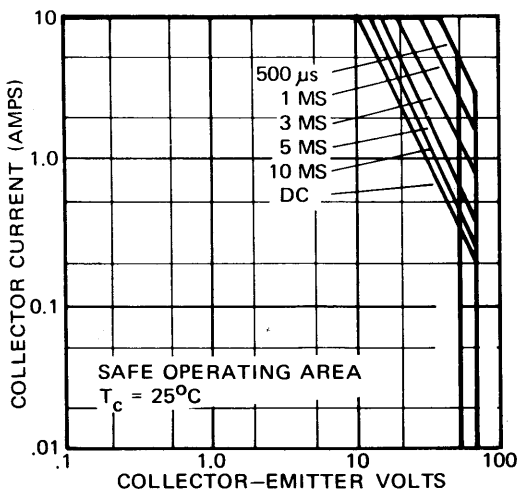
TO-5 FAMILY SAFE OPERATING REGION



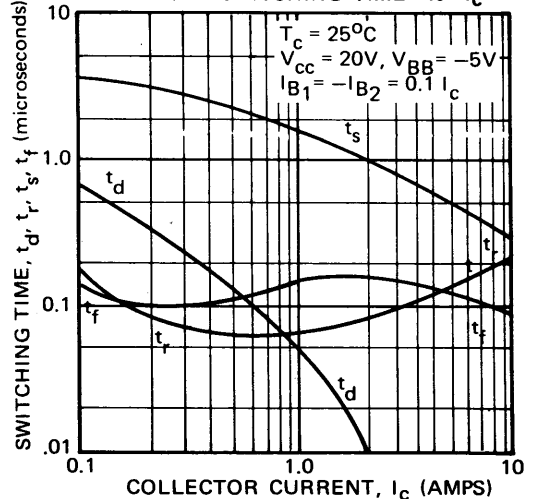
TO-66 FAMILY SAFE OPERATING REGION - FORWARD BIAS MODE

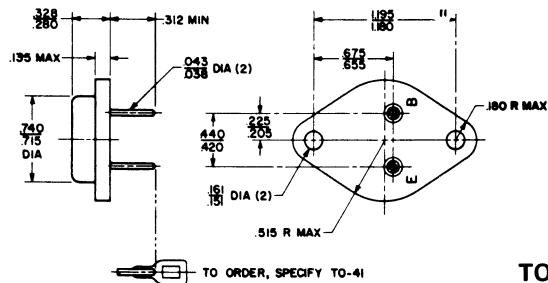


TO-3 FAMILY



TYPICAL SWITCHING TIME vs IC

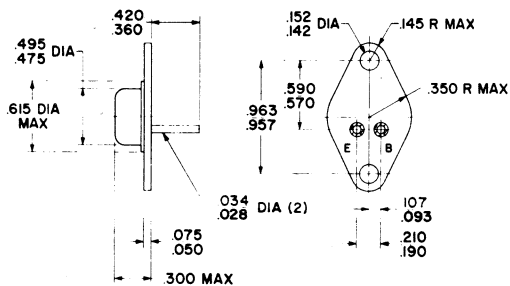




TO-3

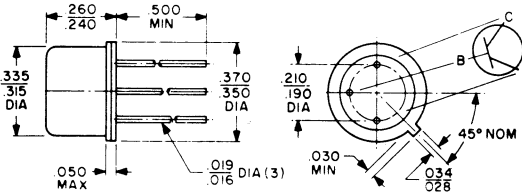
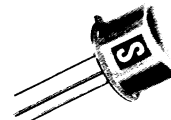
$$\Theta_{J-C} = 1.5^{\circ}\text{C/Watt (65 Watts Max. = } T_C = 100^{\circ}\text{C)}$$

$$\Theta_{J-A} = 45^{\circ}\text{C/Watt}$$



TO-66

$$\Theta_{J-C} = 2.5^{\circ}\text{C/Watt (40 Watts Max. @ } T_C = 100^{\circ}\text{C)}$$



TO-39

$$\Theta_{J-C} = 20^{\circ}\text{C/Watt (5 Watts Max. @ } T_C = 100^{\circ}\text{C)}$$

$$\Theta_{J-A} = 140^{\circ}\text{C/Watt}$$

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When you think of semiconductors . . . think Solitron!