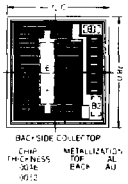
POWER DARLINGTONS
5 Amp, 150V, NPN

JAN, JANTX & JANTXV 2N6350
JAN, JANTX & JANTXV 2N6351
JAN, JANTX & JANTXV 2N6352
JAN, JANTX & JANTXV 2N6353

FEATURES
- High Current Gain: up to 2000 min. @ $I_C = 5A$
- Low Saturation Voltage: as low as 1.5V max. @ $I_C = 2A$
- Peak Current: to 10A
- JAN/JANTX/JANTXV versions meet MIL-S-19500/472



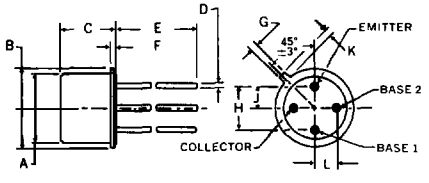
DESCRIPTION
Unitrode NPN Darlingtons consist of a two transistor circuit on a single monolithic planar chip. The 2N6350 series is characterized for fast switching applications.

ABSOLUTE MAXIMUM RATINGS

	TO-33		3 PIN TO-66	
	JAN, JANTX & JANTXV 2N6350	JAN, JANTX & JANTXV 2N6351	JAN, JANTX & JANTXV 2N6352	JAN, JANTX & JANTXV 2N6353
Collector—Emitter Voltage	80V	150V	80V	150V
Emitter—Base Voltages				
V_{EB2}	6V	6V	6V	6V
V_{EB1}	12V	12V	12V	12V
D.C. Collector Current	5A	5A	5A	5A
Peak Collector Current	10A	10A	10A	10A
Base 1 Current	0.5A	0.5A	0.5A	0.5A
Power Dissipation				
25°C Ambient	1W	1W	2W	2W
100°C Case	5W	5W	25W	25W
Thermal Resistance				
Junction-to-Case	20°C/W		4.0°C/W	
Operating and StorageTemperature Range	-65°C to +200°C		-65°C to +200°C	

MECHANICAL SPECIFICATIONS

JAN, JANTX & JANTXV 2N6350 **JAN, JANTX & JANTXV 2N6351**

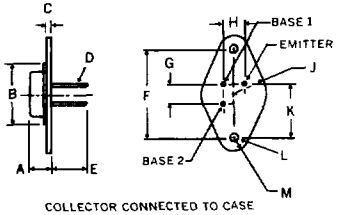


COLLECTOR CONNECTED TO CASE

	ins.	mm
A	305 - 335	7.75 - 8.51
B	335 - 370	8.51 - 9.40
C	240 - 260	6.10 - 6.60
D	017 ± .002 .001	432 ± .051 .025
E	1.5 MIN	38.10 MIN
F	018 MAX	0.46 MAX
G	031 ± 003	0.79 ± .08
H	200	1.02
J	100	2.54
K	029 - 045	0.74 - 1.14
L	100	2.54

TO-33

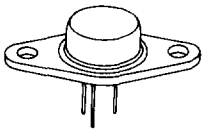
JAN, JANTX & JANTXV 2N6352 **JAN, JANTX & JANTXV 2N6353**



COLLECTOR CONNECTED TO CASE

	ins	mm
A	250 - 340	6.35 - 8.64
B	620 MAX	15.75 MAX
C	050 - 075	1.27 - 1.91
D	028 - 034	0.71 - 0.86
E	360 MIN	9.14 MIN
F	958 - 962	24.33 - 24.43
G	190 - 210	4.83 - 5.33
H	190 - 210	4.83 - 5.33
J	350 MAX RAD	8.89 MAX RAD
K	570 - 590	14.48 - 14.99
L	142 - 152	3.61 - 3.86
M	145 MAX RAD	3.68 MAX RAD

3 PIN TO-66



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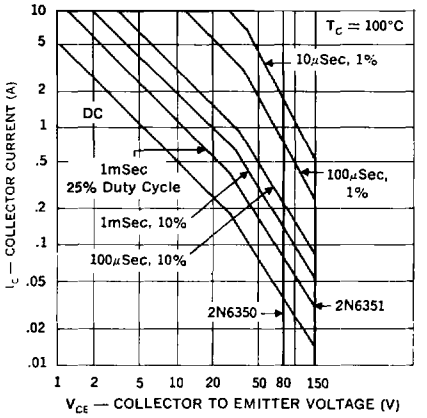
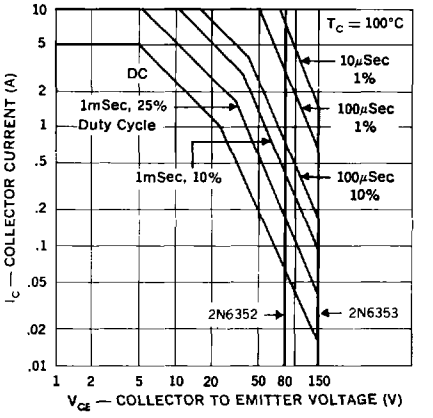
ELECTRICAL SPECIFICATIONS (at 25°C unless noted)

Test	Symbol	Min.	Max.	Units	MIL-STD-750 Method	MIL-STD-750 Test Conditions
Visual and Mechanical					2071	See Mechanical Data
25°C Collector–Emitter Breakdown Voltage 2N6350, 2N6352 2N6351, 2N6353	BV_{CER}	 80 150		 Vdc Vdc	3011	I_C = 25mA, R_{BE1} = 2.2K, R_{BE2} = 100 Ohms
Emitter Base Breakdown Voltage, Base 1 Emitter Base Breakdown Voltage, Base 2 Collector — Emitter Cutoff Current D.C. Current Gain 2N6350, 2N6352 2N6351, 2N6353	BV_{EBO1} BV_{EBO2} I_{CEX} h_{FE}	12 6 2000 1000	 1.0 	Vdc Vdc μAdc 	3026 3026 3041 3076 	I_E = 12mA Base 2 Open I_E = 12mA Base 1 Open V_{CE} = BV_{CER} Rating V_{CE} = 5Vdc; I_C = 1.0A (pulse) R_{BE2} = 1K
D.C. Current Gain 2N6350, 2N6352 2N6351, 2N6353	h_{FE}	 2000 1000	 10000 10000		3076	V_{CE} = 5Vdc; I_C = 5.0Adc (pulse) R_{BE2} = 100 Ohms
D.C. Current Gain 2N6350, 2N6352 2N6351, 2N6353	h_{FE}	 400 200			3076	V_{CE} = 5Vdc; I_C = 10Adc (pulse) R_{BE2} = 100 Ohms
Collector Saturation Voltage 2N6350, 2N6352 2N6351, 2N6353	V_{CE} (sat)		 1.5 2.5	 Vdc Vdc	3071	I_C = 5.0Adc, R_{BE2} = 100 Ohms I_{B1} = 5mAdc (pulse) I_{B1} = 10mAdc (pulse)
Base Saturation Voltage	V_{BE1} (on)		2.5	Vdc	3066	I_C = 5.0Adc (pulse), V_{CE} = 5Vdc R_{BE2} = 100 Ohms
A.C. Current Gain	$\lvert h_{FE} \rvert$	5	25		3066	V_{CE} = 10Vdc, I_C = 1.0Adc, f = 10MHz R_{BE2} = 100 Ohms
Output Capacitance	C_{OBO1}		120	pf	3236	V_{CB1} = 10Vdc, 100KHz ⩽ f ⩽ 1MHz Base 2 open
Turn-on Time	t_{on}		0.5	μs	3251	V_{CC} = 30Vdc; I_C = 5.0Adc See Switching Speed Circuit
Turn-off Time	t_{off}		1.2	μs	3251	V_{CC} = 30Vdc; I_C = 5.0Adc See Switching Speed Circuit
150°C Collector–Emitter Cutoff Current	I_{CEX}		1.0	mAdc	3041	V_{EB1} = 2Vdc, R_{BE2} = 100 Ohms V_{CE} = BV_{CER} Rating
−65°C D.C. Current Gain 2N6350, 2N6352 2N6351, 2N6353	h_{FE}	 400 200			3076	V_{CE} = 5Vdc, I_C = 5.0Adc (pulse) R_{BE2} = 100 Ohms

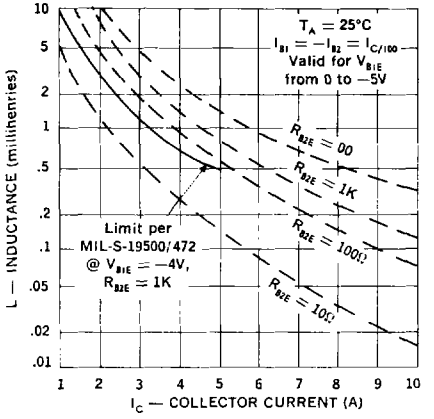
Forward Bias Safe Operating Area 2N6350, 2N6351



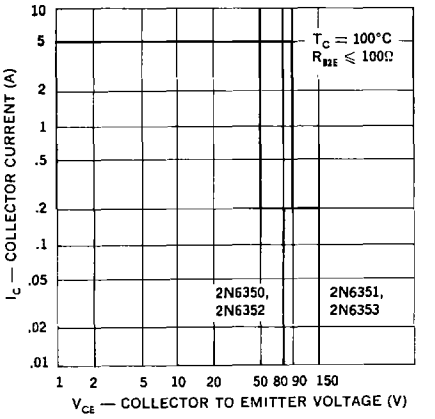
Forward Bias Safe Operating Area 2N6352, 2N6353



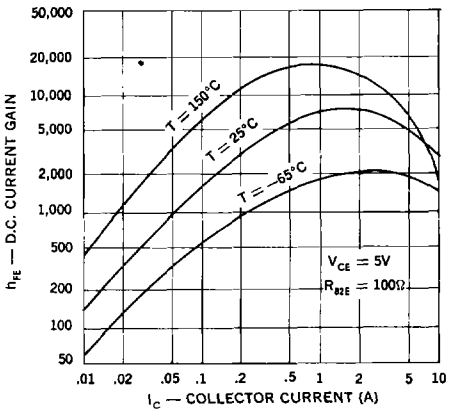
Unclamped Reverse Bias Second Breakdown



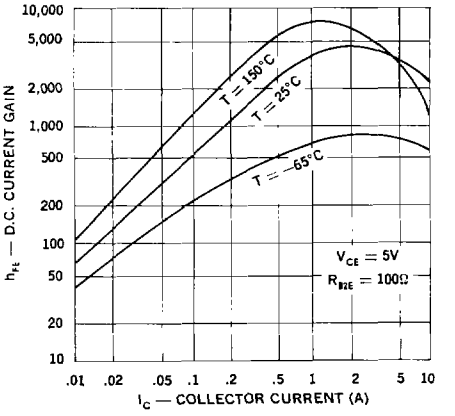
Reverse Bias Safe Operating Area Clamped Inductive Switching



D.C. Current Gain 2N6350, 2N6352



D.C. Current Gain 2N6351, 2N6353



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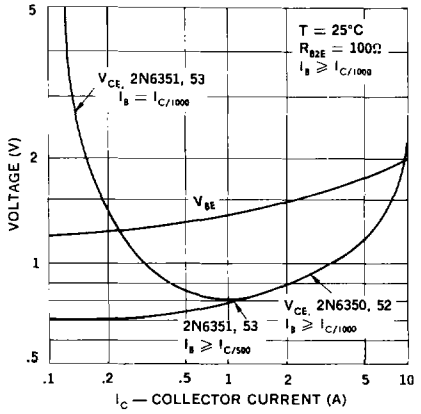
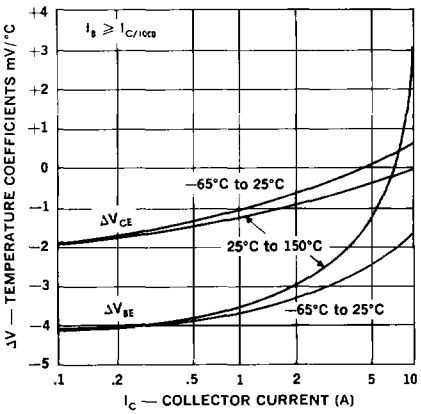
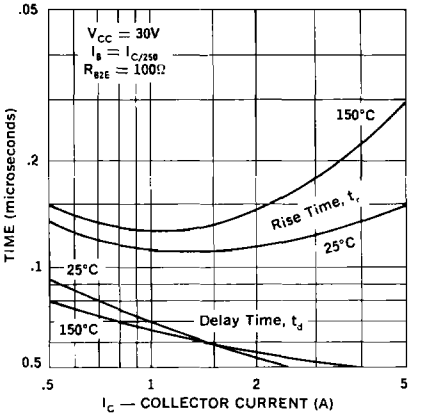
Saturation Voltages



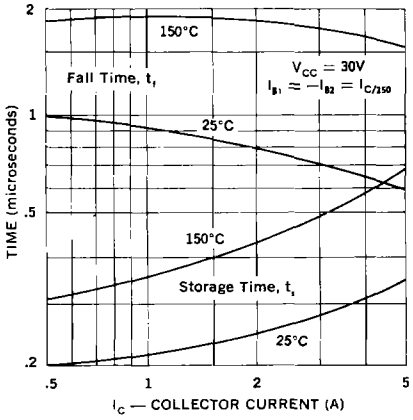
Saturation Voltage Temperature Coefficients



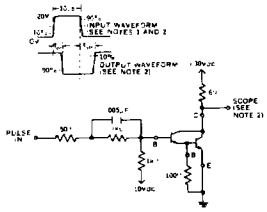
Switching Speed Characteristics



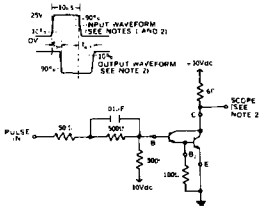
Switching Speed Characteristics



2N6350 & 52 Switching Speed Circuit

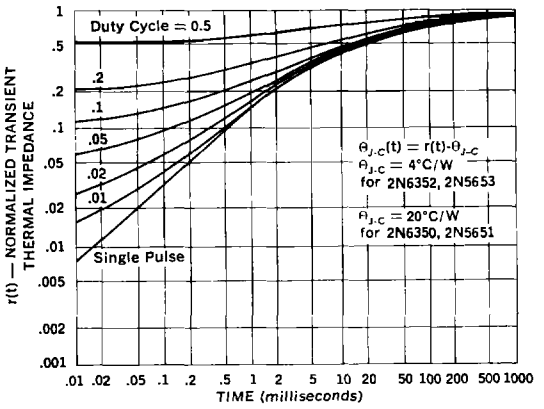


2N6351 & 3 Switching Speed Circuit



NOTES
1. The input waveform is supplied by a pulse generator with the following characteristics $t_r \leq 15$ ns, $t_f \leq 15$ ns, $Z_{out} = 50\Omega$, PW = 10 μs, Duty cycle ≤ 2%.
2. Output waveforms are monitored on an oscilloscope with the following characteristics: $t_r \leq 15$ ns, $Z_{in} \geq 10$ MΩ, $C_{in} \leq 11.5$ pF.
3. Resistors shall be noninductive types.
4. The DC power supplies may require additional by-passing in order to minimize ringing.

Thermal Response



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