

POWER TRANSISTORS

0.1 Amp, 500V, Planar NPN, Plastic

UPTB520
UPTB530
UPTB540
UPTB550

T-35-19

FEATURES

- Designed for High Speed Switching Applications
- Collector-Emitter Voltage: up to 500V
- Peak Collector Current: to .2A
- Economical Plastic Molded Construction

DESCRIPTION

Unitrode high voltage power transistors provide a unique combination of low saturation voltage, high gain and fast switching. They are ideally suited for pulse power applications in power supplies, thermal printers, solid state relays and pulse amplifiers.

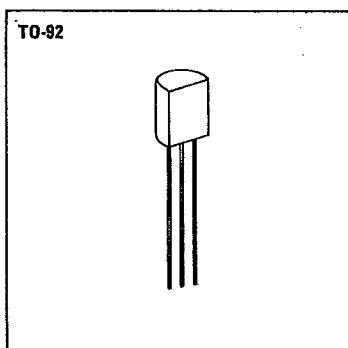
ABSOLUTE MAXIMUM RATINGS

	UPTB520	UPTB530	UPTB540	UPTB550
Collector-Base Voltage, V_{CBO}	250V	350V	450V	550V
Collector-Emitter Voltage, V_{CEO}	200V	300V	400V	500V
Emitter-Base Voltage, V_{EBO}	5V	5V	5V	5V
D.C. Collector Current, I_C	.1A	.1A	.1A	.1A
Peak Collector Current, I_{Cp}	.2A	.2A	.2A	.2A
Base Current, I_B	.1A	.1A	.1A	.1A
Power Dissipation				
25°C Case			2.4W	
25°C Ambient			750mW	
Thermal Resistance, θ_{J-C}			62.5°C/W	
Thermal Resistance, θ_{J-A}			200°C/W	
Storage Temperature Range			-55°C to +150°C	
Maximum Junction Temperature			+175°C	

MECHANICAL SPECIFICATIONS

UPTB520 UPTB530 UPTB540 UPTB550

	INCHES	MILLIMETERS
A	.135 MIN.	3.42 MIN.
B	.170 - .210	4.31 - 5.33
C	.500 MIN.	12.70 MIN.
D	.016 - .019	.406 - .482
E	.175 - .205	4.44 - 5.21
F	.125 - .165	3.17 - 4.19
G	.080 - .105	2.03 - 2.66
H	.095 - .105	2.41 - 2.66
J	.045 - .055	1.14 - 1.40



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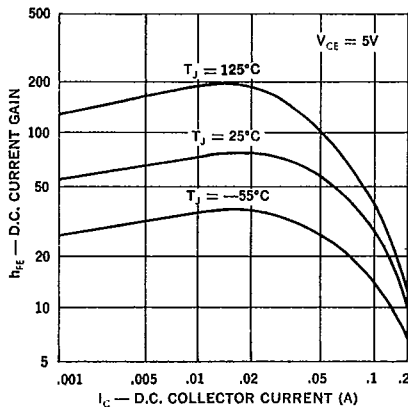
ELECTRICAL SPECIFICATIONS (at 25°C unless noted)

Test	Symbol	Min.	Max.	Units	Test Conditions
D.C. Current Gain (Note 1)	h_{FE}	20	—	—	$I_C = 25mA, V_{CE} = 5Vdc$
D.C. Current Gain (Note 1)	$h_{FE}^{(sat)}$	5	—	—	$I_C = 100mA, V_{CE} = 5Vdc$
Collector Saturation Voltage (Note 1)	$V_{CE(sat)}$	—	1.2	Vdc	$I_C = 50mA, I_B = 10mA$
	$V_{CE(sat)}$	—	1.0	Vdc	$I_C = 20mA, I_B = 2mA$
Base Saturation Voltage (Note 1)	$V_{BE(sat)}$	—	1.5	Vdc	$I_C = 50mA, I_B = 10mA$
Collector-Base Breakdown Voltage (Note 1)	BV_{CBO}			Vdc	$I_C = 10\mu Adc$
UPTB520		250	—		
UPTB530		350	—		
UPTB540		450	—		
UPTB550		550	—		
Collector-Emitter Breakdown Voltage (Note 1)	BV_{CEO}			Vdc	$I_C = 1mA dc$
UPTB520		200	—		
UPTB530		300	—		
UPTB540		400	—		
UPTB550		500	—		
Collector-Emitter Cutoff Current	I_{CES}	—	10	μAdc	$V_{CE} = \text{rated } BV_{CEO}, V_{BE} = 0$
Collector-Emitter Cutoff Current	I_{CES}	—	1	mAdc	$V_{CE} = \text{rated } BV_{CEO}, T = 125^\circ C, V_{BE} = 0$
Emitter-Base Cutoff Current	I_{EBO}	—	50	μAdc	$V_{EB} = 5Vdc$
Output Capacitance	C_{ob}	—	50	pf	$V_{CB} = 10Vdc, I_E = 0, f = 1MHz$
Gain-Bandwidth Product	f_T	15	—	MHz	$I_C = 1Adc, V_{CE} = 5Vdc, f = 10MHz$
Rise Time	t_r	100 Typ.		ns	$I_C = 100mA$
Delay Time	t_d	50 Typ.		ns	
Storage Time	t_s	200 Typ.		ns	
Fall Time	t_f	1000 Typ.		ns	

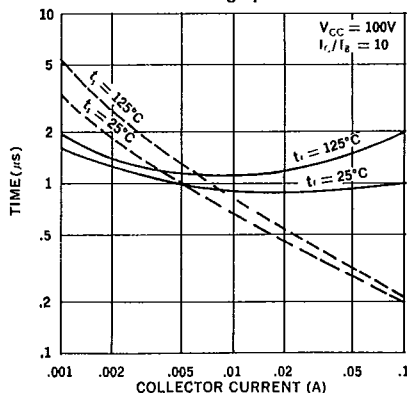
Note 1. Pulse width = 300 μs ; duty cycle \leq 2%.

Note 2. For thermal considerations for operating UPTB520, UPTB530, UPTB540 and UPTB550, refer to Application Note U-77.

D.C. Current Gain vs. Collector Current



Switching Speeds



Switching Speed Circuit

