

TL/G/10036-1

DESCRIPTION

Process 4P is a double-diffused silicon epitaxial planar device. Complement to Process 5P.

APPLICATION

This device was designed for power amplifier, regulator and switching circuits where speed is important.

Electrical Characteristics ($T_A = 25^\circ\text{C}$)

Symbol	Conditions	Min	Typ	Max	Units
BV_{CEO}	$I_C = 100 \text{ mA}$ (Note 1)	50		120	V
BV_{CES}	$I_C = 1 \text{ mA}$	75			V
BV_{EBO}	$I_E = 1 \text{ mA}$	5	8		V
I_{CES}	$V_{CE} = 50\text{V}$			5	μA
I_{EBO}	$V_{EB} = 5\text{V}$			5	μA
h_{FE}	$I_C = 20 \text{ mA}$, $V_{CE} = 1\text{V}$	30			
h_{FE}	$I_C = 300 \text{ mA}$, $V_{CE} = 1\text{V}$	40	80	300	
h_{FE}	$I_C = 4\text{A}$, $V_{CE} = 1\text{V}$	10			
$V_{CE(SAT)}$	$I_C = 2\text{A}$, $I_B = 0.2\text{A}$		0.5	0.5	V
$V_{BE(SAT)}$	$I_C = 2\text{A}$, $I_B = 0.2\text{A}$		1	1.1	V
f_t	$V_{CE} = 5\text{V}$, $I_C = 0.5\text{A}$	50			MHz
C_{OB}	$V_{CB} = 10\text{V}$		45		pF
C_{iB}	$V_{EB} = 1\text{V}$		400		pF
t_r	$I_C = 2\text{A}$, $V_{CE} = 30\text{V}$ $I_{B1} = I_{B2} = 0.2\text{A}$		60		ns
t_s			750		ns
t_f			80		ns
$P_{D(max)}$	$T_C = 25^\circ\text{C}$				
TO-220		40			W
TO-202	$T_C = 25^\circ\text{C}$	15			W
θ_{JC}	$T_C = 25^\circ\text{C}$				
TO-220		3.2		$^\circ\text{C/W}$	
TO-202	$T_C = 25^\circ\text{C}$			8.33	$^\circ\text{C/W}$
θ_{JA}	$T_A = 25^\circ\text{C}$				
TO-220		62.5		$^\circ\text{C/W}$	
TO-202	$T_A = 25^\circ\text{C}$			62.5	$^\circ\text{C/W}$
$T_{J(max)}$	All Plastic Parts	150			$^\circ\text{C}$

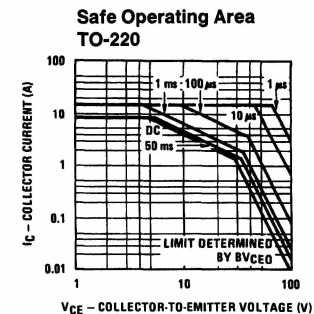
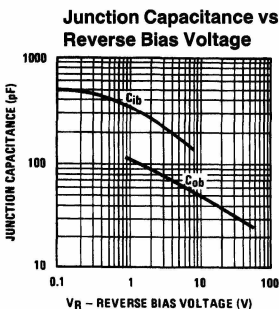
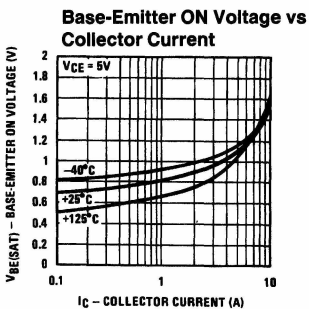
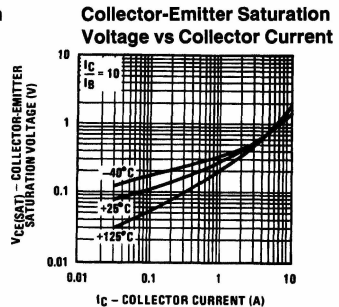
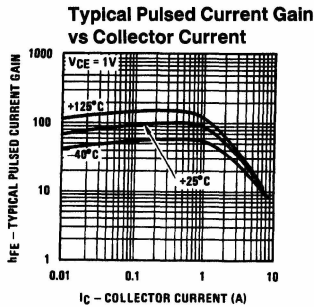
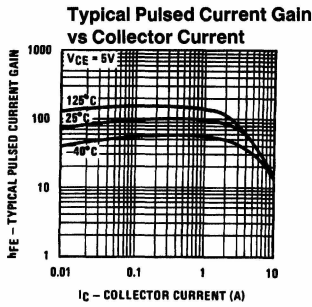
Note 1: Pulsed measurement = 300 μs pulse width.

Process 4P

Process 4P

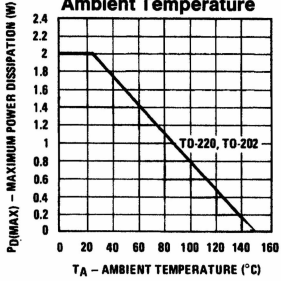
This process is available in the following device types.

	V _{CE0} (V), Min	h _{FE}		@ I _C (A)
		Min	Max	
TO-202 (NS Package 56)				
D42C1	30	25	120	0.2
D42C2	30	40		
D42C3	30	40		
D42C4	45	25		
D42C5	45	40		
D42C6	45	40		
D42C7	60	25		
D42C8	60	40		
D42C9	60	40		
D42C10	80	25		
D42C11	80	40		
D42C12	80	40		
TO-220 (NS Package 57)				
D44C1	30	25	120	0.2
D44C2	30	40		
D44C3	30	40		
D44C4	45	25		
D44C5	45	40		
D44C6	45	40		
D44C7	60	25		
D44C8	60	40		
D44C9	60	40		
D44C10	80	25		
D44C11	80	40		
D44C12	80	40		

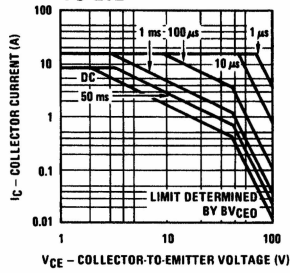


TL/G/10036-2

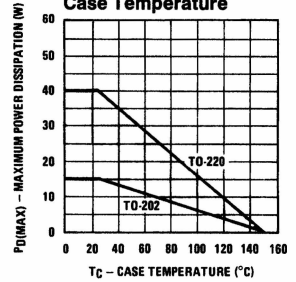
Minimum Power Dissipation vs Ambient Temperature



Safe Operating Area TO-202

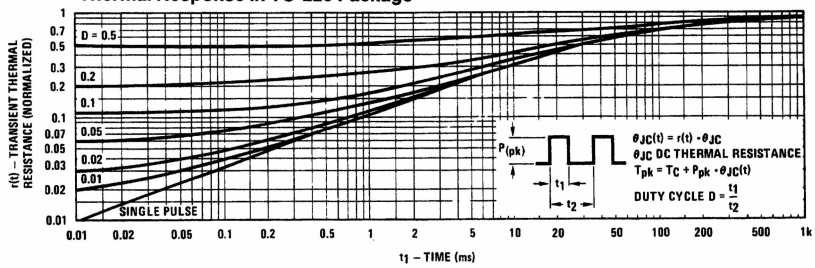


Maximum Power Dissipation vs Case Temperature



TL/G/10036-3

Thermal Response in TO-220 Package



TL/G/10036-4