

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

**ON CHARACTERISTICS <sup>(3)</sup>**

|                                                                                                                                         |               |          |      |     |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------|----------|------|-----|
| Forward-Current Transfer Ratio<br>$I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}$<br>$I_C = 100 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ | $h_{FE}$      | 25<br>40 | 100  |     |
| Collector-Emitter Saturation Voltage<br>$I_C = 1.0 \text{ Adc}, I_B = 0.125 \text{ Adc}$                                                | $V_{CE(sat)}$ |          | 0.75 | Vdc |
| Base-Emitter Saturation Voltage<br>$I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$                                                       | $V_{BE(sat)}$ |          | 1.4  | Vdc |

**DYNAMIC CHARACTERISTICS**

|                                                                                                                                                                 |            |     |     |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----|-----|----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio<br>$I_C = 200 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 5.0 \text{ MHz}$ | $ h_{fe} $ | 3.0 | 15  |    |
| Small-Signal Short-Circuit Forward Current Transfer Ratio<br>$I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 1.0 \text{ kHz}$                              | $h_{fe}$   | 25  | 200 |    |
| Output Capacitance<br>$V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$                                                           | $C_{obo}$  |     | 120 | pF |

**SWITCHING CHARACTERISTICS**

|                                                                                                                   |           |  |     |         |
|-------------------------------------------------------------------------------------------------------------------|-----------|--|-----|---------|
| Turn-On Time<br>$V_{CC} = 30 \text{ Vdc}; I_C = 1.0 \text{ Adc}; I_B = 100 \text{ mAdc}; R_C = 29 \Omega$         | $t_{on}$  |  | 3.0 | $\mu s$ |
| Turn-Off Time<br>$V_{CC} = 30 \text{ Vdc}; I_C = 1.0 \text{ Adc}; I_B = -I_B = 100 \text{ mAdc}; R_C = 29 \Omega$ | $t_{off}$ |  | 7.0 | $\mu s$ |

**SAFE OPERATING AREA**

|                                                                                                                                       |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| <b>DC Tests</b><br>$T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$                                                      |  |  |  |  |
| <b>Test 1</b><br>$V_{CE} = 17.5 \text{ Vdc}, I_C = 2.0 \text{ Adc}$                                                                   |  |  |  |  |
| <b>Test 2</b><br>$V_{CE} = 100 \text{ Vdc}, I_C = 350 \text{ mAdc}$                                                                   |  |  |  |  |
| <b>Test 3</b><br>$V_{CE} = 250 \text{ Vdc}, I_C = 37 \text{ mAdc}$ 2N3584<br>$V_{CE} = 300 \text{ Vdc}, I_C = 17 \text{ mAdc}$ 2N3585 |  |  |  |  |

(3) Pulse Test: Pulse Width = 300 $\mu s$ , Duty Cycle  $\leq 2.0\%$ .