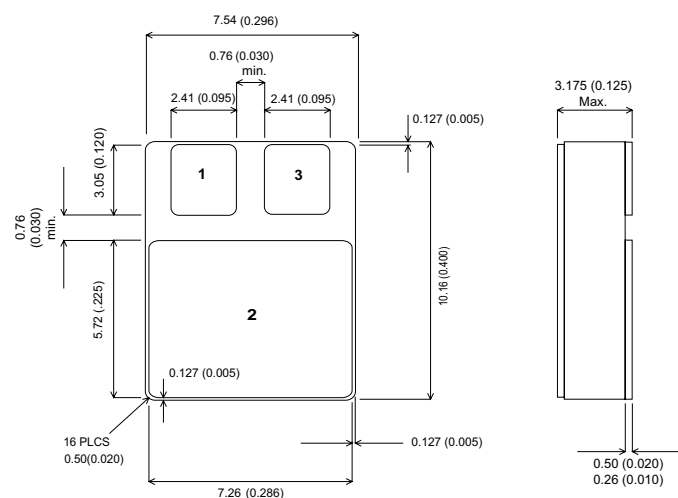


**MECHANICAL DATA**

Dimensions in mm (inches)



**PNP BIPOLAR TRANSISTOR IN A CERAMIC SURFACE MOUNT PACKAGE FOR HIGH-REL AND SPACE APPLICATIONS**

**DESCRIPTION**

The 2N5151SMD05 and the 2N5153SMD05 are silicon epitaxial planar PNP transistors in a Ceramic Surface Mount Package for use in Switching and Linear applications.

The complementary NPN types are the 2N5152SMD05 and 2N5154SMD05 respectively

**SMD05**

Underside View

PAD 1 = Base    PAD 2 = Collector    PAD = 3 – Emitter

**ABSOLUTE MAXIMUM RATINGS**

$T_{CASE} = 25^{\circ}C$  unless otherwise stated

		2N5151SMD05	2N5153SMD05
$V_{CBO}$	Collector – Base Voltage		-100V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )		-80V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )		-5.5V
$I_C$	Continuous Collector Current		-5A
$I_{C(PK)}$	Peak Collector Current		-10A
$I_B$	Base Current		-2.5A
$P_{tot}$	Total Dissipation at $T_{amb} = 25^{\circ}C$		1W
	$T_{case} = 50^{\circ}C$		10W
	$T_{case} = 100^{\circ}C$		6.7W
$T_{stg}$	Operating and Storage Temperature Range		-65 to +200°C
$T_j$	Junction temperature		200°C

**ELECTRICAL CHARACTERISTICS FOR 2N5151SMD05** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$ Collector Cut Off Current	$V_{CE} = -60V$ $V_{BE} = 0$			-1	$\mu A$
	$V_{CE} = -100V$ $V_{BE} = 0$			-1	mA
$I_{CEV}$ Collector Cut Off Current	$V_{CE} = -60V$ $T_{case} = 150^{\circ}C$ $V_{BE} = 2V$			-500	$\mu A$
$I_{CEO}$ Collector Cut Off Current	$V_{CE} = -40V$ $I_B = 0$			-50	
$I_{EBO}$ Emitter Cut Off Current	$V_{EB} = -4V$ $I_C = 0$			-1	$\mu A$
	$V_{EB} = -5.5V$ $I_C = 0$			-1	mA
$V_{CEO(SUS)}$ Collector Emitter Saturation Voltage	$I_C = -100mA$ $I_B = 0$	80			V
$V_{CE(sat)}$ Collector Emitter Saturation Voltage	$I_C = -2.5A$ $I_B = -250mA$			-0.75	
	$I_C = -5A$ $I_B = -500mA$			-1.5	
$V_{BE(sat)}$ Base Emitter Saturation Voltage	$I_C = -2.5A$ $I_B = -250mA$			-1.45	
	$I_C = -5A$ $I_B = -500mA$			-2.2	
$V_{BE}$ Base Emitter Voltage	$I_C = -2.5A$ $V_{CE} = -5V$			-1.45	
$h_{FE}$ DC Current Gain	$I_C = -50mA$ $V_{CE} = -5V$	20			—
	$I_C = -2.5A$ $V_{CE} = -5V$	30		90	
	$I_C = -5A$ $V_{CE} = -5V$ $T_{case} = -55^{\circ}C$	20			
	$I_C = 2.5A$ $V_{CE} = -5V$	15			
$C_{CBO}$ Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10V$ $f = 1MHz$			250	pF
$h_{FE}$ Small Signal Current Gain	$I_C = -0.1A$ $V_{CE} = -5V$ $f = 1KHz$	20			—
	$I_C = -0.5A$ $V_{CE} = -5V$ $f = 20MHz$	3			
$t_{on}$ Turn On Time	$I_C = -5A$ $V_{CC} = 30V$ $I_{B1} = -0.5A$		0.5		$\mu s$
$t_{off}$ Turn Off Time	$I_C = -5A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.5A$		1.3		$\mu s$

\* Pulse test  $t_p = 300\mu s$ ,  $\delta < 2\%$

**THERMAL DATA**

$R_{thj-case}$ Thermal Resistance Junction-case			15	$^{\circ}C/W$
$R_{thj-amb}$ Thermal Resistance Junction-ambient			175	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS FOR 2N5153SMD05** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$ Collector Cut Off Current	$V_{CE} = -60V$ $V_{BE} = 0$			-1	$\mu A$
	$V_{CE} = -100V$ $V_{BE} = 0$			-1	mA
$I_{CEV}$ Collector Cut Off Current	$V_{CE} = -60V$ $T_{case} = 150^{\circ}C$ $V_{BE} = 2V$			-500	$\mu A$
$I_{CEO}$ Collector Cut Off Current	$V_{CE} = -40V$ $I_B = 0$			-50	
$I_{EBO}$ Emitter Cut Off Current	$V_{EB} = -4V$ $I_C = 0$			-1	$\mu A$
	$V_{EB} = -5.5V$ $I_C = 0$			-1	mA
$V_{CEO(SUS)}$ Collector Emitter Saturation Voltage	$I_C = -100mA$ $I_B = 0$	80			V
$V_{CE(sat)}$ Collector Emitter Saturation Voltage	$I_C = -2.5A$ $I_B = -250mA$			-0.75	
	$I_C = -5A$ $I_B = -500mA$			-1.5	
$V_{BE(sat)}$ Base Emitter Saturation Voltage	$I_C = -2.5A$ $I_B = -250mA$			-1.45	
	$I_C = -5A$ $I_B = -500mA$			-2.2	
$V_{BE}$ Base Emitter Voltage	$I_C = -2.5A$ $V_{CE} = -5V$			-1.45	
$h_{FE}$ DC Current Gain	$I_C = -50mA$ $V_{CE} = -5V$	50			—
	$I_C = -2.5A$ $V_{CE} = -5V$	70		90	
	$I_C = -5A$ $V_{CE} = -5V$ $T_{case} = -55^{\circ}C$	40			
	$I_C = 2.5A$ $V_{CE} = -5V$	35			
$C_{CBO}$ Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10V$ $f = 1MHz$			250	pF
$h_{FE}$ Small Signal Current Gain	$I_C = -0.1A$ $V_{CE} = -5V$ $f = 1KHz$	20			—
	$I_C = -0.5A$ $V_{CE} = -5V$ $f = 20MHz$	3			
$t_{on}$ Turn On Time	$I_C = -5A$ $V_{CC} = 30V$ $I_{B1} = -0.5A$		0.5		$\mu s$
$t_{off}$ Turn Off Time	$I_C = -5A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.5A$		1.3		$\mu s$

\* Pulse test  $t_p = 300\mu s$ ,  $\delta < 2\%$

**THERMAL DATA**

$R_{thj-case}$ Thermal Resistance Junction-case			15	$^{\circ}C/W$
$R_{thj-amb}$ Thermal Resistance Junction-ambient			175	$^{\circ}C/W$