



**BDY23, 180 T2**  
**BDY24, 181 T2**  
**BDY25, 182 T2**

## NPN SILICON TRANSISTORS, DIFFUSED MESA

LF Large Signal Power Amplification  
 High Current Fast Switching

### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
$V_{CEO}$	Collector-Emitter Voltage	BDY23, 180T2	60	V
		BDY24, 181T2	90	
		BDY25, 182T2	140	
$V_{CBO}$	Collector-Base Voltage	BDY23, 180T2	60	V
		BDY24, 181T2	100	
		BDY25, 182T2	200	
$V_{EBO}$	Emitter-Base Voltage	BDY23, 180T2 BDY24, 181T2 BDY25, 182T2	10	V
$I_C$	Collector Current	BDY23, 180T2 BDY24, 181T2 BDY25, 182T2	6	A
$I_B$	Base Current	BDY23, 180T2 BDY24, 181T2 BDY25, 181T2	3	A
$P_{TOT}$	Power Dissipation	@ $T_C = 25^\circ$ BDY23, 180T2 BDY24, 181T2 BDY25, 182T2	87.5	Watts
$T_J$	Junction Temperature	BDY23, 180T2 BDY24, 181T2	200 -65 to +200	$^\circ C$
$T_{Stg}$	Storage Temperature	BDY25, 182T2		

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**THERMAL CHARACTERISTICS**

Symbol	Ratings	Value	Unit
$R_{thJ-C}$	Thermal Resistance, Junction to Case	BDY23, 180T2 BDY24, 181T2 BDY25, 182T2	2 °C/W

**ELECTRICAL CHARACTERISTICS**

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$V_{CEO(BR)}$	Collector-Emitter Breakdown Voltage (*)	$I_C=50\text{ mA}, I_B=0$	BDY23, 180T2	60	-	-	V
			BDY24, 181T2	90	-	-	
			BDY25, 182T2	140	-	-	
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (*)	$I_C=3\text{ mA}$	BDY23, 180T2	60	-	-	V
			BDY24, 181T2	100	-	-	
			BDY25, 182T2	200	-	-	
$I_{CEO}$	Collector-Emitter Cutoff Current	$V_{CE}=60\text{ V}$	BDY23	-	-	1.0	mA
		$V_{CE}=90\text{ V}$	BDY24	-	-		
		$V_{CE}=140\text{ V}$	BDY25	-	-		
$I_{EBO}$	Emitter-Base Cutoff Current	$V_{EB}=10\text{ V}$	BDY23, 180T2 BDY24, 181T2 BDY25, 182T2	-	-	1.0	mA
$I_{CES}$	Collector-Emitter Cutoff Current	$V_{CE}=60\text{ V}$ $V_{BE}=0\text{ V}$	BDY23, 180T2	-	-	0.5	mA
		$V_{CE}=100\text{ V}$ $V_{BE}=0\text{ V}$	BDY24, 181T2	-	-	1.0	
		$V_{CE}=180\text{ V}$ $V_{BE}=0\text{ V}$	BDY25, 182T2	-	-	1.0	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C=2.0\text{ A}, I_B=0.25\text{ A}$	BDY23, 180T2	-	-	1	V
			BDY24, 181T2	-	-	0.6	
			BDY25, 182T2	-	-	0.6	

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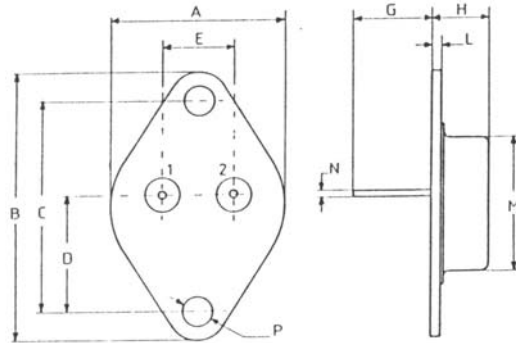
Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$V_{BE(SAT)}$	Base-Emitter Voltage (*)	$I_C=2.0\text{ A}, I_B=0.25\text{ A}$	<b>BDY23, 180T2</b>	-	-	2.0	V
			<b>BDY24, 181T2</b>	-	-	1.2	
			<b>BDY25, 182T2</b>	-	-	1.2	
$h_{21E}$	Static Forward Current transfer ratio (*)	$V_{CE}=4\text{ V}, I_C=1\text{ A}$	<b>A</b>	-	55	-	-
			<b>B</b>	-	65	-	
			<b>C</b>	-	90	-	
		$V_{CE}=4\text{ V}, I_C=2\text{ A}$	<b>A</b>	15	20	45	
			<b>B</b>	30	45	90	
			<b>C</b>	75	82	100	
$f_T$	Transition Frequency	$V_{CE}=15\text{ V}, I_C=0.5\text{ A}, f=10\text{ MHz}$	<b>BDY23, 180T2</b> <b>BDY24, 181T2</b> <b>BDY25, 182T2</b>	10	-	-	MHz
$t_d + t_r$	Turn-on time	$I_C=5\text{ A}, I_B=1\text{ A}$	<b>BDY23, 180T2</b> <b>BDY24, 181T2</b> <b>BDY25, 182T2</b>	-	0.3	0.5	$\mu\text{s}$
$t_s + t_f$	Turn-off time	$I_C=5\text{ A}, I_{B1}=1\text{ A}, I_{B2}=-0.5\text{ A}$	<b>BDY23, 180T2</b> <b>BDY24, 181T2</b> <b>BDY25, 182T2</b>	-	1.5	2.0	$\mu\text{s}$

(\*) Pulse Width  $\approx 300\ \mu\text{s}$ , Duty Cycle  $\angle 2.0\%$

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**MECHANICAL DATA CASE TO-3**

DIMENSIONS		
	mm	inches
A	25,45	1
B	38,8	1,52
C	30,09	1,184
D	17,11	0,67
E	9,78	0,38
G	11,09	0,43
H	8,33	0,32
L	1,62	0,06
M	19,43	0,76
N	1	0,04
P	4,08	0,16



Pin 1 :	Base
Pin 2 :	Emitter
Case :	Collector