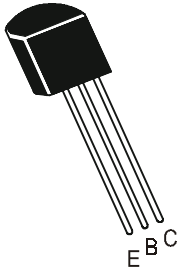


**NPN SILICON PLANAR EPITAXIAL TRANSISTORS**

**2N6515, 2N6519  
2N6516, 2N6520  
2N6517**



**TO-92  
Plastic Package**

**HIGH VOLTAGE TRANSISTORS**

**ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise)**

DESCRIPTION	SYMBOL	2N6515	2N6516	2N6517	UNIT
			2N6519	2N6520	
Collector Emitter Voltage	$V_{CEO}$	250	300	350	V
Collector Base Voltage	$V_{CBO}$	250	300	350	V
Emitter Base Voltage	$V_{EBO}$	<b>NPN</b> -----	6	-----	V
		<b>PNP</b> -----	5	-----	V
Collector Current Continuous	$I_C$		500		mA
Base Current (Continuous)	$I_B$		250		mA
Total Power Dissipation @ Ta=25°C	$P_D$		625		mW
Derate Above 25°C			5.0		mW/°C
Operating And Storage Junction Temperature Range	$T_{stg}$		-55 to +150		°C

**THERMAL RESISTANCE**

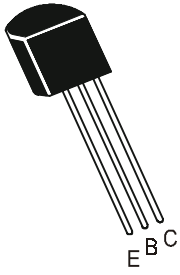
Junction to ambient	$R_{th(j-a)}$		200		°C/W
Junction to case	$R_{th(j-c)}$		83.3		°C/W

**ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)**

DESCRIPTION	SYMBOL TEST CONDITION	MIN	MAX	UNIT	
Collector Emitter Breakdown Voltage	$BV_{CEO}^*$ $I_C=1mA, I_B=0$				
		2N6515	250		V
		2N6516, 6519	300		V
		2N6517, 6520	350		V
Collector Base Breakdown Voltage	$BV_{CBO}$ $I_C=100\mu A, I_E=0$				
		2N6515	250		V
		2N6516, 6519	300		V
		2N6517, 6520	350		V
Emitter Base Breakdown Voltage	$BV_{EBO}$ $I_E=10\mu A, I_C=0$				
		<b>NPN</b>	6		V
		<b>PNP</b>	5		V

# NPN SILICON PLANAR EPITAXIAL TRANSISTORS

2N6515, 2N6519  
2N6516, 2N6520  
2N6517

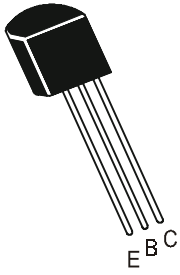


TO-92  
Plastic Package

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT	
<b>Collector Cut off Current</b>	$I_{CBO}$					
		2N6515	$V_{CB}=150V, I_E=0$		50	nA
		2N6516, 6519	$V_{CE}=200V, I_E=0$		50	nA
		2N6517, 6520	$V_{CE}=250V, I_E=0$		50	nA
<b>Emitter Cut off Current</b>	$I_{EBO}$					
		NPN	$V_{EB}=5V, I_C=0$		50	nA
		PNP	$V_{EB}=4V, I_C=0$		50	nA
<b>DC Current Gain</b>	$h_{FE}^*$	$V_{CE}=10V, I_C=1mA$				
			2N6515	35		
			2N6516, 6519	30		
			2N6517, 6520	20		
			2N6515	50		
			2N6516, 6519	45		
			2N6517, 6520	30		
			2N6515	50	300	
			2N6516, 6519	45	270	
			2N6517, 6520	30	200	
			2N6515	45	220	
			2N6516, 6519	40	200	
			2N6517, 6520	20	200	
			2N6515	25		
			2N6516, 6519	20		
			2N6517, 6520	15		
<b>Base Emitter Saturation Voltage</b>	$V_{BE(sat)}^*$	$I_C=10mA, I_B=1mA$		0.75	V	
		$I_C=20mA, I_B=2mA$		0.85	V	
		$I_C=30mA, I_B=3mA$		0.90	V	
<b>Collector Emitter Saturation Voltage</b>	$V_{CE(sat)}^*$	$I_C=10mA, I_B=1mA$		0.3	V	
		$I_C=20mA, I_B=2mA$		0.35	V	
		$I_C=30mA, I_B=3mA$		0.50	V	
		$I_C=50mA, I_B=5mA$		1.0	V	
<b>Base Emitter on Voltage</b>	$V_{BE(on)}^*$	$I_C=100mA, V_{CE}=10V$		2.0	V	

# NPN SILICON PLANAR EPITAXIAL TRANSISTORS

2N6515, 2N6519  
2N6516, 2N6520  
2N6517



TO-92  
Plastic Package

## ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
<b>DYNAMIC CHARACTERISTICS</b>					
Transition Frequency	$f_T^*$	$I_C=10\text{mA}, V_{CE}=20\text{V}$ $f=20\text{MHz}$	40	200	MHz
Collector Base Capacitance	$C_{cb}$	$V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$		6.0	pF
Emitter Base Capacitance	$C_{eb}$	$V_{EB}=0.5\text{V}, f=1\text{MHz}, I_C=0$			
	<b>NPN</b>			80	pF
	<b>PNP</b>			100	pF
Turn on Time	$t_{on}$	$V_{CC}=100\text{V}, V_{BE}(\text{off})=2.0\text{V}$ $I_C=50\text{mA}, I_{B1}=10\text{mA}$		200	$\mu\text{s}$
Turn Off Time	$t_{off}$	$V_C=100\text{V}, I_C=50\text{mA},$ $I_{B1}=I_{B2}=10\text{mA}$		3.5	$\mu\text{s}$

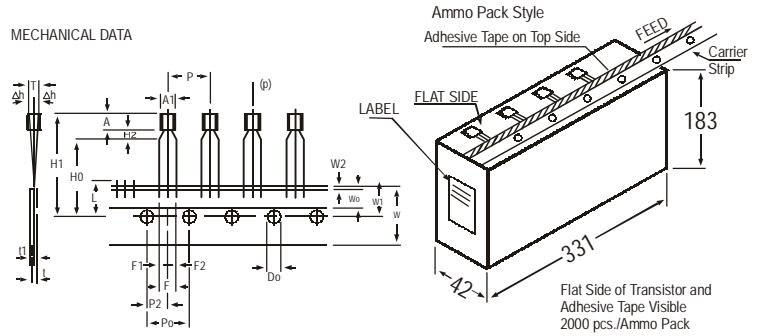
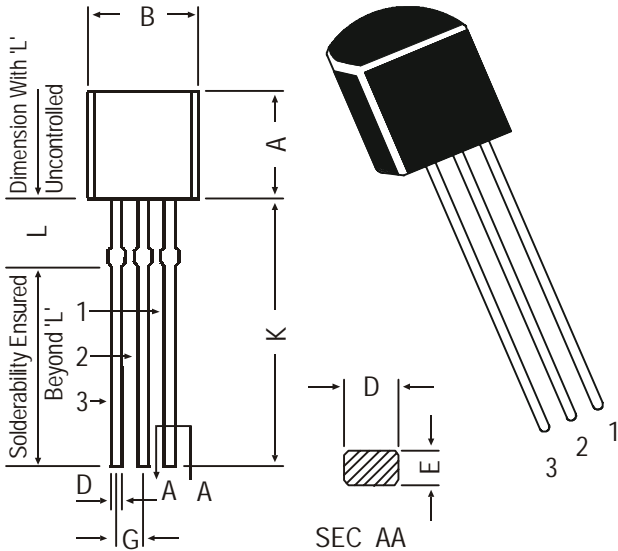
\*Pulse Condition: Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

2N6515, 2N6519  
2N6516, 2N6520  
2N6517

TO-92  
Plastic Package

TO-92 Plastic Package

TO-92 Transistors on Tape and Ammo Pack



All dimensions in mm unless specified otherwise

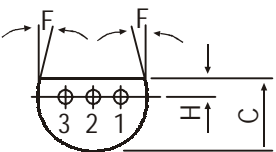
ITEM	SYMBOL	SPECIFICATION				REMARKS
		MIN.	NOM.	MAX.	TOL.	
BODY WIDTH	A1	4.0		4.8		
BODY HEIGHT	A	4.8		5.2		
BODY THICKNESS	T	3.9		4.2		
PITCH OF COMPONENT	P		12.7		±1	CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH
FEED HOLE PITCH	Po		12.7		±0.3	
FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		±0.4	TO BE MEASURED AT BOTTOM OF CLINCH
DISTANCE BETWEEN OUTER LEADS	F		5.08		+0.6 -0.2	AT TOP OF BODY
COMPONENT ALIGNMENT	Δh		0	1		
TAPE WIDTH	W		18		±0.5	
HOLD-DOWN TAPE WIDTH	Wo		6		±0.2	
HOLE POSITION	W1		9		+0.7 -0.5	
HOLD-DOWN TAPE POSITION	W2		0.5		±0.2	
LEAD WIRE CLINCH HEIGHT	Ho		16		±0.5	
COMPONENT HEIGHT	H1			23.25		
LENGTH OF SNIPPED LEADS	L			11.0		
FEED HOLE DIAMETER	Do		4		±0.2	t1 0.3 - 0.6
TOTAL TAPE THICKNESS	t			1.2		
LEAD - TO - LEAD DISTANCE F1,	F2		2.54		+0.4 -0.1	
CLINCH HEIGHT	H2			3		
PULL - OUT FORCE	(P)	6N				

NOTES

1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS ARE PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.14	1.53
K	12.70	—
L	1.982	2.082

All dimensions in mm.



PIN CONFIGURATION

1. COLLECTOR
2. BASE
3. EMITTER

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

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