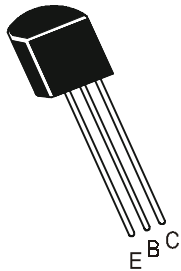


NPN SILICON PLANAR EPITAXIAL TRANSISTORS

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}	NPN -----	6-----		V
		PNP -----	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

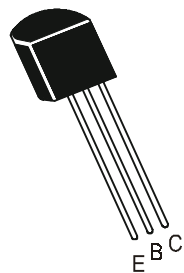
Junction to ambient	$R_{th(j-a)}$		200		°C/W
Junction to case	$R_{th(j-c)}$		83.3		°C/W

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} $I_E=10\mu A, I_C=0$				
		NPN	6		V
		PNP	5		V

NPN SILICON PLANAR EPITAXIAL TRANSISTORS

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

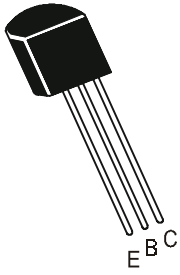


TO-92
Plastic Package

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT	
Collector Cut off Current	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
Emitter Cut off Current	I_{EBO}					
		NPN	$V_{EB}=5V, I_C=0$		50	nA
		PNP	$V_{EB}=4V, I_C=0$		50	nA
DC Current Gain	h_{FE}^*	$V_{CE}=10V, I_C=1mA$				
			2N6515		35	
			2N6516, 6519		30	
			2N6517, 6520		20	
			2N6515	$V_{CE}=10V, I_C=10mA$	50	
			2N6516, 6519		45	
			2N6517, 6520		30	
			2N6515	$V_{CE}=10V, I_C=30mA$	50	300
			2N6516, 6519		45	270
			2N6517, 6520		30	200
			2N6515	$V_{CE}=10V, I_C=50mA$	45	220
			2N6516, 6519		40	200
			2N6517, 6520		20	200
			2N6515	$V_{CE}=10V, I_C=100mA$	25	
			2N6516, 6519		20	
			2N6517, 6520		15	
Base Emitter Saturation Voltage	$V_{BE(sat)}^*$	$I_C=10mA, I_B=1mA$		0.75	V	
		$I_C=20mA, I_B=2mA$		0.85	V	
		$I_C=30mA, I_B=3mA$		0.90	V	
Collector Emitter Saturation Voltage	$V_{CE(sat)}^*$	$I_C=10mA, I_B=1mA$		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	
Base Emitter on Voltage	$V_{BE(on)}^*$	$I_C=100mA, V_{CE}=10V$		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
DYNAMIC CHARACTERISTICS					
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}	$V_{EB}=0.5\text{V}, f=1\text{MHz}, I_C=0$			
	NPN			80	pF
	PNP			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	μs
Turn Off Time	t_{off}	$V_C=100\text{V}, I_C=50\text{mA},$ $I_{B1}=I_{B2}=10\text{mA}$		3.5	μs

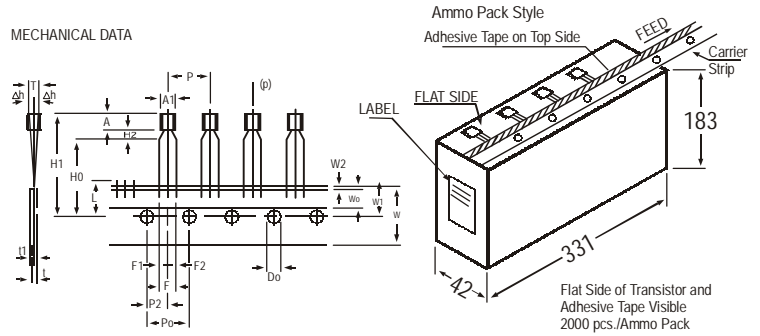
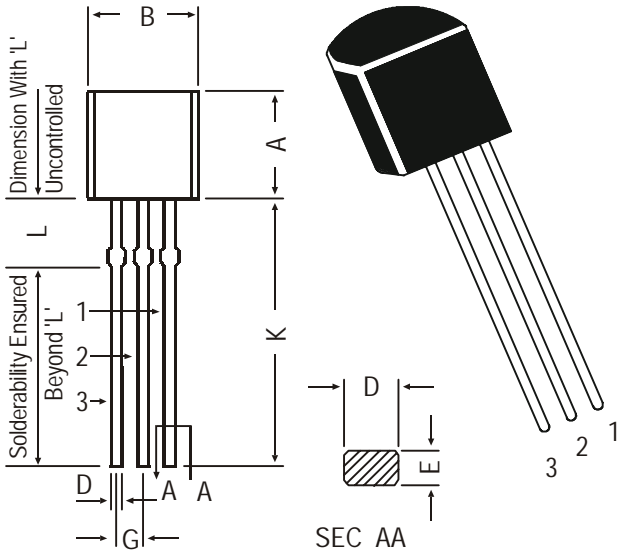
*Pulse Condition: Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

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

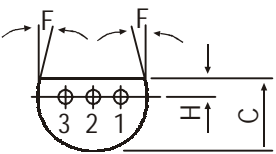
ITEM	SYMBOL	SPECIFICATION				REMARKS
		MIN.	NOM.	MAX.	TOL.	
BODY WIDTH	A1	4.0		4.8		
BODY HEIGHT	A	4.8		5.2		
BODY THICKNESS	T	3.9		4.2		
PITCH OF COMPONENT	P		12.7		±1	CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH
FEED HOLE PITCH	Po		12.7		±0.3	
FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		±0.4	TO BE MEASURED 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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