

MILITARY SPECIFICATION

**CV 7455 - 58**

SEMICONDUCTOR DEVICE, TRANSISTOR  
 2N1483, 2N1484, 2N1485, 2N1486

Description: This specification covers the detail requirements for Silicon NPN medium power transistors and is in accordance with K1007 Issue 3 except where otherwise stated.

Mechanical Dimensions and Outlines: K1007 Section B 10.3.2.5 and 10.4.2.5.  
 Retaining Clamp. Fig.5 Page 14.

Connections: Collector connected to Case.  
 Pin 1. Emitter, Pin 2. Base, Pin 3. Collector.

Absolute Maximum Ratings

Device	Rating	V <sub>CBO</sub>	V <sub>EBO</sub>	V <sub>CEO</sub>	V <sub>CEX</sub>	I <sub>C</sub>	I <sub>B</sub>	T <sub>stg</sub>	θ <sub>j-c</sub>	T <sub>opr</sub>	P <sub>c</sub>
	Unit	V	V	V	V	A	A	°C	°C/W	°C	W
CV7455	Min	-	-	-	-	-	-	-55	-	-	-
& CV7457	Max	60	12	40	60	3.0	1.5	+200	7	+200	25
CV7456	Min	-	-	-	-	-	-	-55	-	-	-
& CV7458	Max	100	12	55	100	3.0	1.5	+200		+200	25

Device	Rating	Shock	Vibration
	Unit	g	g
All	Max	1500	20
	Notes	A	

Note A: Duration 0.5 mSec.  
 B: Commercial equivalents ZT1483-1486  
 CV numbers run consecutively.

15th October, 1963

(152613)

# CV7455-58

## Primary Electrical Characteristics:

Characteristic		$I_{CBO}$	$I_{EBO}$	$V_{CE}$ (sat)	$V_{BE}$	$h_{FE}$	$I_{CBO}$	$f_{hfb}$
Unit		$\mu A$	$\mu A$	V	V		mA	kc/s
CV7455 & CV7456	Min	-	-	-	-	20	-	600
	Max	15	15	2.0	3.0	60		-
CV7457 & CV7458	Min	-	-	-	-	35	-	600
	Max	15	15	0.75	2.0	100		-
CONDITIONS	$T_{case}$ °C	25	25	25	25	25	175	25
	$V_{CB}$ V	30	-	-	-	-	30	28
	$V_{CE}$ V	-	-	-	4.0	4.0	-	-
	$V_{EB}$ V	-	12	-	-	-	-	-
	$I_C$ mA	-	0	750	750	750	-	5
	$I_E$ mA	0	-	-	-	-	0	-
	$I_B$ mA	-	-	Note 1	-	-	-	-

Note 1 CV7455 & 7456  $I_B = 75mA$ , CV7457 & 7458  $I_B = 40mA$

Reliability Assurance Requirements:-

Under discussion

Requirements:-

Marking: The device shall be marked as K1007 Section B 1.3.4., as space permits, any other marking shall be on the pack.

Quality Assurance Provisions

Destructive Tests The tests listed in Table 2, Group B Inspection, Sub Groups 2 and 3 and Group C Sub Group 2 are considered destructive.

Group C Inspection This Inspection shall be conducted on the initial lot, and thereafter every ninety days or every fifth lot, whichever occurs first.

Preparation for Delivery:-

Packaging: The device shall be packed according to K1007, Section A. 1.2(c). Insulating washers and retaining clamp will be packed with each device.

Joint Service Catalogue Numbers:-

CV7455	=	5960-99-037-3578
CV7456	=	5960-99-037-3579
CV7457	=	5960-99-037-3580
CV7458	=	5960-99-037-3581

This specification has been prepared by, and the Qualification Approval Authority is:-

Ministry of Aviation, Royal Radar Establishment, Malvern, Worcs. England.

15th October, 1963

TABLE 1 GROUP A INSPECTION

Examination or Test	K1007/NATO Ref.	TEST CONDITIONS		AQL %	Insp. Level	Sym-bol	LIMITS		Units
		Specific Conditions					Min.	Max.	
<u>SUB GROUP 1</u> Visual and Mechanical Inspection	5.1	Excluding Physical Dimensions		0.65	I				
<u>SUB GROUP 2</u> Collector-Base cut-off Current (1)	7.2.5.1	$V_{CB} = 30V$ $I_E = 0$		0.65	II	$I_{CBO}$	-	15	$\mu A$
Collector-Emitter Sustaining Voltage	7.2.2.2.1	$I_C = 100mA$ $I_B = 0$	CV74-55, CV74-57 CV74-56, CV74-58			$V_{CEO}$ (sust.)	40 55	-	V V
Emitter Base Cut off Current	7.2.6	$I_C = 0.25mA$ $V_{EB} = 1.5V$	CV74-55, CV74-57 CV74-56, CV74-58			$V_{CEX}$	60 100	-	V V
<u>SUB GROUP 3</u> Static Forward Current Transfer Ratio (1)	7.3.4	$I_C = 750mA$ $V_{CE} = 4.0V$	CV74-55, CV74-57 CV74-56, CV74-58	2.5	I	$I_{EBO}$	-	15	$\mu A$



TABLE 2 GROUP B INSPECTION

See Page 3, Quality Assurance Provisions, Destructive Tests

Examination or Test	K1007/NATO Ref.	TEST CONDITIONS		AQL %	Insp. Level	Sym- bol	LIMITS		Units
		Specific Conditions					Min.	Max.	
<u>SUB GROUP 1</u> Physical Dimensions	5.1	According to drawing Page 13		6.5	IC				
<u>SUB GROUP 2</u> Solderability	5.13			4.0	IA				
Temperature Cycling	5.5	-55°C to +200°C							
Moisture Resistance	5.3.1								
<u>SUB GROUP 3</u> Vibration Fatigue	5.15	Non operating		4.0	I Note 1				
<u>SUB GROUP 4</u> Omitted									
<u>SUB GROUP 5</u> Omitted									
<u>SUB GROUP 6</u> Omitted									
<u>SUB GROUP 7</u> High Temperature Life (non-operating)	6.2.1 6.6.1.2.2	T <sub>stg</sub> = +200°C		4.0	I Note 1				

TABLE 2 GROUP B INSPECTION (Cont'd)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Sym-bol	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
<u>SUB GROUP 8</u> Operating Life	6.3 6.6.1.2.2	T <sub>amb</sub> at any temperature between +100°C and +160°C V <sub>CB</sub> = max for devices. P <sub>c</sub> = to wattage shown on Derating curve for chosen temperature Fig.1	4.0	IA				
<u>Post Test End Points for Sub Groups 2 and 3</u>								
Collector-Base Cut-off Current (1)	7.2.5.1	V <sub>CB</sub> = 30V I <sub>E</sub> = 0			I <sub>CBO</sub>	-	45	μA
Static Forward Current Transfer Ratio	7.3.4	V <sub>CB</sub> = 4.0V I <sub>C</sub> = 750mA CV7455 CV7456 CV7457 CV7458			h <sub>FE</sub>	10 25		
<u>Post Test End Points for Sub Groups 7 and 8</u>								
Collector Base Cut-off Current (1)	7.2.5.1	V <sub>CB</sub> = 30V I <sub>E</sub> = 0			I <sub>CBO</sub>	-	45	μA

TABLE 2 GROUP B INSPECTION (Cont'd)

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Sym- bol	LIMITS		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
Static Forward Transfer Ratio	7.3.4	$V_{CB} = 4.0V$ $I_C = 750mA$ CV7455 CV7456 CV7457 CV7458			$h_{FE}$	15 25		



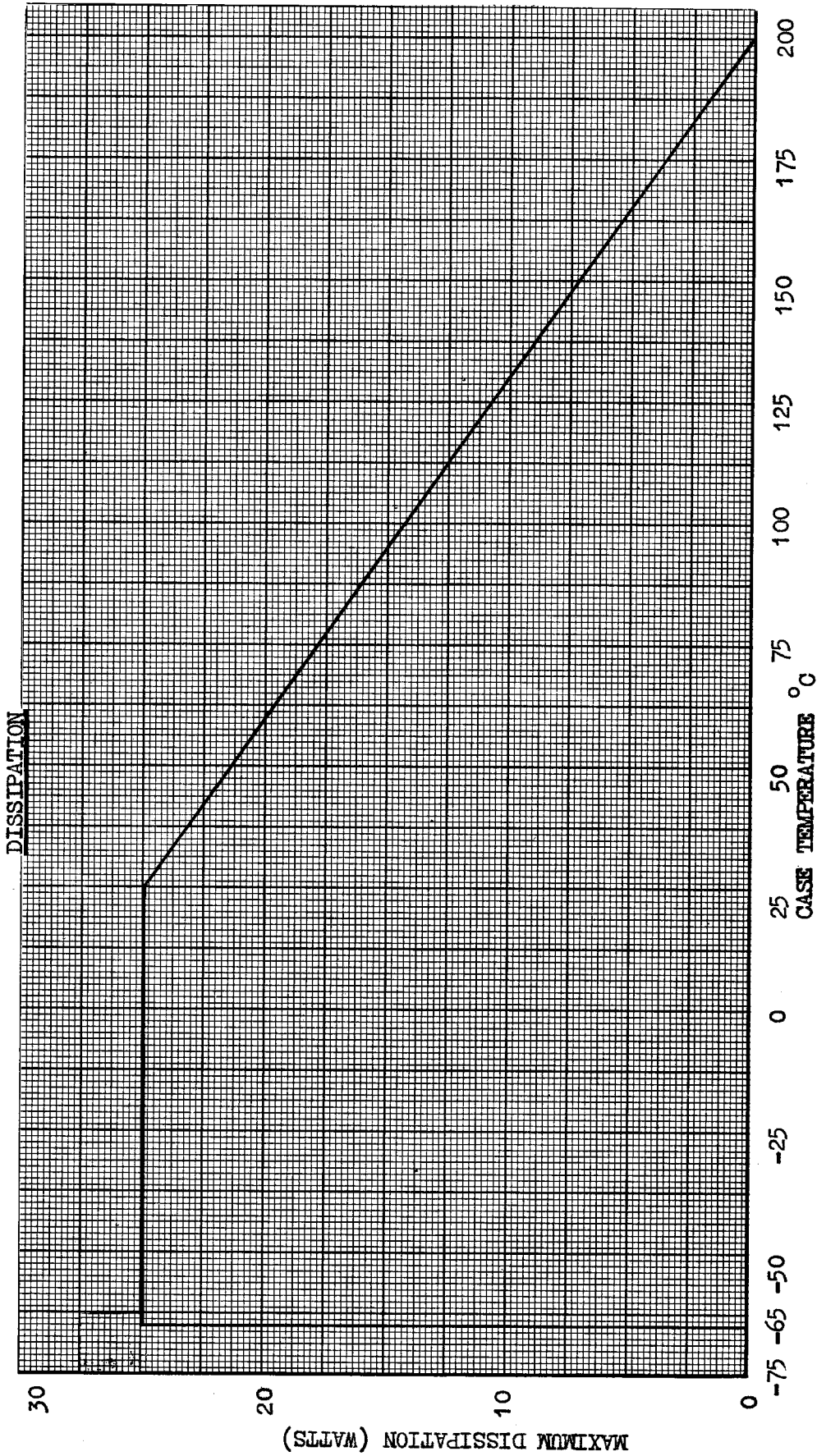
TABLE 3 GROUP C INSPECTION  
See Page 3. Quality Assurance Provisions. Destructive Tests and Gp. C.

Examination or Test	K1007/NATO Ref.	TEST CONDITIONS Specific Conditions	AQL Insp. Level %	Sym- bol	LIMITS		Units
					Min.	Max.	
<u>SUB GROUP 1</u> Omitted							
<u>SUB GROUP 2</u> Shock		5 blows in each of three mutually perpendicular directions.	6.5 IA				
<u>POST TEST END POINTS for SUB GROUP 2</u>							
Collector Base Cut-off Current (1)	7.2.5.1	$V_{CB} = 30V$ $I_E = 0$		$I_{CBO}$	-	45	$\mu A$
Static Forward Current Transfer Ratio	7.3.4	$V_{CB} = 4.0V$ $I_C = 750 \text{ mA}$ CV74-55 CV74-56 CV74-57 CV74-58		$h_{FE}$		15 25	

NOTES

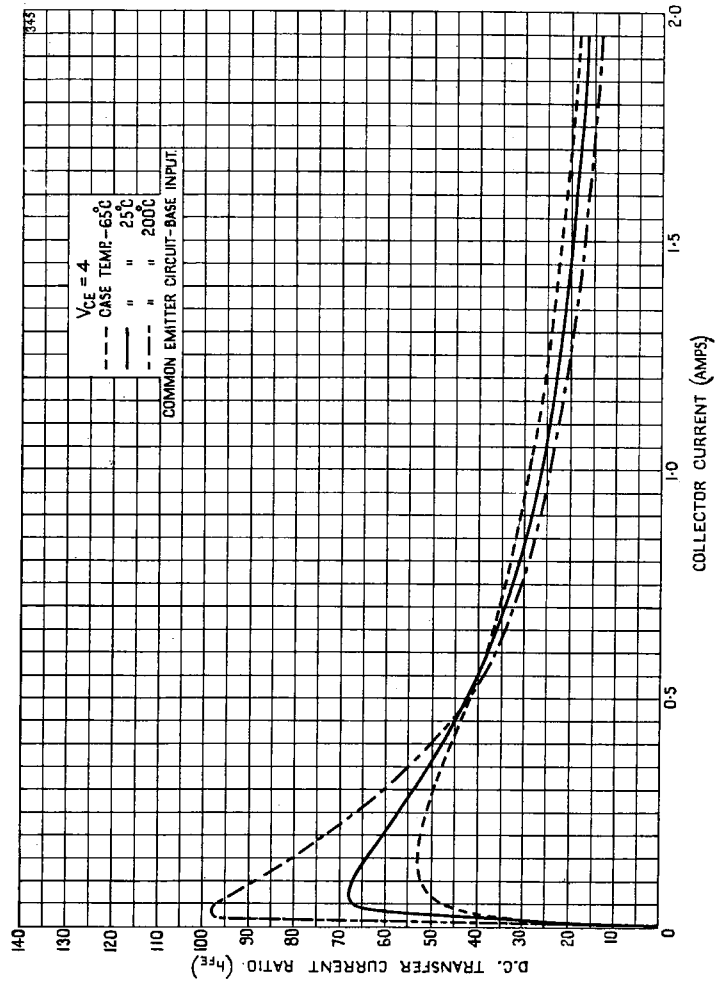
1. Maximum Sample size will be 125

FIG 1



**FIG 2**

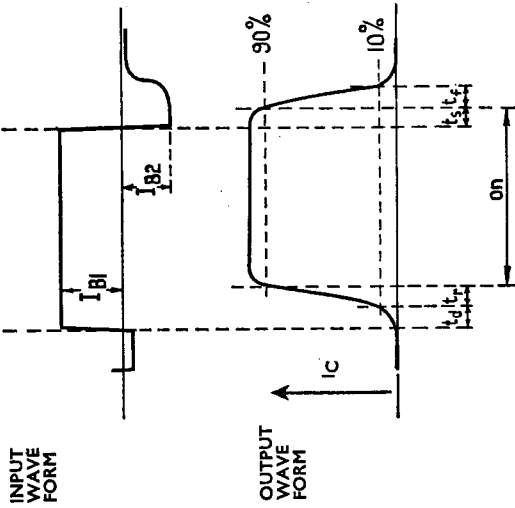
TYPICAL VARIATION OF DC CURRENT GAIN ( $h_{FE}$ )  
with Collector current and Ambient Temperature.



15th October, 1963

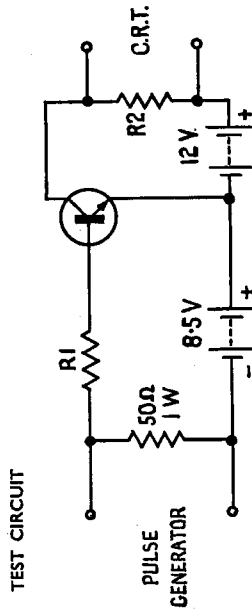
Page 11

**FIG 3**



363

TYPICAL POWER-SWITCHING PERFORMANCE



362

TYPICALLY.

$t_{on} = t_d + t_r = 200 + 1000 = 1200 \mu\text{Sec.}$	
$t_{off} = t_s + t_f = 800 + 1100 = 1900 \mu\text{Sec.}$	
'On' DC Collector current	... = 750 mA.
'Turn on' Base current ( $I_{B1}$ )	... = 65 mA.
'Turn off' Base current ( $I_{B2}$ )	... = -35 mA.

R1	...	...	...	220Ω	1W.
R2	...	...	...	15-9Ω	2W.

FIG. 4  
RETAINING CLAMP

