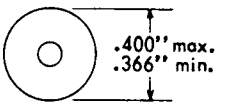
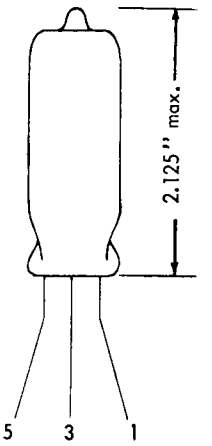
TYPE CK6542

The CK6542 is a **cold** cathode, gas-filled diode of subminiature construction, designed for service as a voltage regulator. It has an operating current range of 5 to 25 milliamperes over which it maintains a substantially constant operating voltage of approximately 150 volts. Two cathode leads are provided which may be used to disconnect the load when the tube is removed from the socket. This type is characterized by long life and it is designed for service where severe conditions and mechanical shock or vibration are encountered. The flexible terminal leads may be soldered or welded directly to the terminals of circuit components without the use of sockets. Standard inline subminiature sockets may be used by cutting the leads to a suitable length.





MECHANICAL DATA

ENVELOPE: T-3 Glass

BASE: None (0.016" tinned flexible leads. Length: 1.5" min. Spacing: 0.096" center-to-center)

TERMINAL CONNECTIONS:

Lead 1 Cathode
Lead 3 Anode
Lead 5 Cathode

MECHANICAL RATINGS:

Maximum Impact Acceleration (Shock Test---Note 2)	450 G
Maximum Uniform Acceleration (Centrifuge Test---Note 4)	1000 G
Maximum Vibrational Acceleration (96 Hour Fatigue Test---Note 3)	2.5 G
Maximum Bulb Temperature	155 °C

MOUNTING POSITION: Any

ELECTRICAL DATA

CAUTION-----To Electronic Equipment Design Engineers. Special attention should be given to the temperature of the tubes. Reliability will be seriously impaired if maximum bulb temperature is exceeded. The life expectancy may be reduced if conditions more severe than those specified for life are imposed on the tube and will be reduced appreciably if absolute ratings are exceeded. Attention should be given to the specified minimum supply voltage to insure operation in total darkness. Tube characteristics may deteriorate markedly if the tubes are stored at elevated ambient temperatures without drawing current.

RATINGS:

	Ebb Vdc	Total Darkness Starting Voltage Vdc	Ambient Light Starting Voltage Vdc	Operating Voltage Range Vdc	Operating Current Range mAdc (Note 5)	Bulb Temperature °C (Note 5)	Ambient Temperature °C (Note 5)
Absolute:							
Maximum:	----	----	----	168	25	155	----
Minimum:	225	225	185	140	5	----	-55

CHARACTERISTICS AND QUALITY CONTROL TESTS (Note 1)

TEST	CONDITIONS	AQL %	MIL-E-1 SYMBOL	MIN.	LAL	AVERAGE	UAL	MAX.	ALD	MIL-E-1 UNITS
MEASUREMENTS ACCEPTANCE TEST PART 1						(Combined AQL=1.0% excluding Mechanical and Inoperatives)				
Ionization Voltage (1):	Rp/Ib=5-25 mAdc; Ambient Light	0.65	(1) Ez:	----	----	155	----	180	----	Vdc
Tube Voltage Drop (1):	Rp/Ib=25 mAdc	0.65	(1) Etd:	142	----	149	----	165	----	Vdc
Tube Voltage Drop (2):	Rp/Ib=5 mAdc	0.65	(2) Etd:	142	----	147	----	165	----	Vdc
Regulation:	(1) Etd-(2) Etd	0.65	Reg.:	----	----	2.0	----	6.0	----	Vdc
Continuity and Shorts: (Inoperatives)		0.4	-----	----	----	----	----	----	----	----
MEASUREMENTS ACCEPTANCE TESTS, PART 2										
Ionization Voltage (2):	Rp/Ib=5-25 mAdc Total Darkness	6.5	Ez (2):	----	----	160	----	225	----	Vdc
Leakage:	Eb=50 Vdc, Rp=3000 ohms	6.5	Lib:	----	----	<1	----	20	----	μAdc

ELECTRICAL DATA (cont'd)

CHARACTERISTICS AND QUALITY CONTROL TESTS (Note 1) (cont'd)

TEST	CONDITIONS	AQL %	MIL-E-1 SYMBOL	MIN.	LAL	AVERAGE	UAL	MAX.	ALD	MIL-E-1 UNITS
MEASUREMENTS ACCEPTANCE TESTS, PART 2 (cont'd)										
Noise:	Ebb/Ib=25 mAdc; RL=500 ohms	2.5	Eb:	----	----	<1	----	20	----	mVac
Oscillation:	Esig=100 mVac; RL=500 ohms; Rp/Ib=5-25 mAdc	2.5	-----	----	----	----	----	----	----	----
DEGRADATION RATE ACCEPTANCE TEST										
Subminiature Lead Fatigue:		2.5	-----	4.0	----	----	----	----	----	arcs
Shock:	Hammer Angle=30° (Note 2)	20	-----	----	----	----	----	----	----	----
Fatigue:	G=2.5; Fixed Frequency F=25 min., 60 max. (Note 3) no voltage	6.5	-----	----	----	----	----	----	----	----
Post Shock and Fatigue Test End Points:										
Ionization Voltage (1):	Rp/Ib=5-25 mAdc		(1) Ez:	----	----	155	----	185	----	Vdc
Tube Voltage Drop (1):	Rp/Ib=25 mAdc		(1) Etd:	140	----	149	----	168	----	Vdc
Tube Voltage Drop (2):	Rp/Ib=5 mAdc		(2) Etd:	140	----	147	----	168	----	Vdc
Regulation:	(1) Etd - (2) Etd		Reg:	----	----	2	----	8	----	Vdc
Glass Strain (Thermal Shock):		2.5	----	----	----	----	----	----	----	----

TESTS	CONDITIONS	AQL %	MIL-E-1 Symbol	MIN.	MAX.	MIL-E-1 Units	Allowable Defects per Characteristic 1st Sample	Allowable Defects per Characteristic Combined Samples
ACCEPTANCE LIFE TESTS								
500 Hour Intermittent High Temperature Life Test:	T Bulb=155°C; Rp/Ib=25 mAdc	----	-----	----	----	----	---	---
500 Hour Intermittent High Temperature Life Test End Points:	(Typical Sample Size=20 tubes 1st sample, 40 tubes 2nd Sample)							
Inoperatives:		----	-----	----	----	----	1	3
Regulation:		----	Reg:	----	8	Vdc	2	4
Tube Voltage Drop (1):		----	(1) Etd:	140	168	Vdc	2	4
Tube Voltage Drop (2):		----	(2) Etd:	140	168	Vdc	2	4
Ionization Voltage (1):		----	(1) EZ:	----	185	Vdc	2	4
Total Defectives		----	-----	----	----	----	4	8
1000 Hour High Temperature Life Test:	T Bulb=155°C; Rp/Ib=25 mAdc							
1000 Hour High Temperature Test End Points:	Read for same characteristics as for 500 hour Intermittent Life Test. Limits not established.							

NOTES

Note 1: Characteristics, Quality Control Test Procedures, and Inspection Levels are made according to the appropriate paragraphs of MIL-E-1, "Inspection Instructions for Electron Tubes" and MIL-STD-105A.

Note 2: Test Conditions and Acceptance Criteria per Shock Test Procedures of MIL-E-1 Basic Specifications.

Note 3: Test Conditions and Acceptance Criteria per Fatigue Test Procedures of MIL-E-1 Basic Specifications.

Note 4: Centrifuge Test with forces applied in any direction.

Note 5: Limits beyond which normal tube Performance and Tube life may be impaired.