



SD1732 (TDS595)

RF POWER BIPOLAR TRANSISTORS TV LINEAR APPLICATIONS

FEATURES SUMMARY

- 470 - 860 MHz
- 25 VOLTS
- CLASS A PUSH PULL
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- GOLD METALLIZATION
- DIFFUSED EMITTER BALLAST RESISTORS
- COMMON EMITTER CONFIGURATION
- INTERNAL INPUT MATCHING
- $P_{OUT} = 14.0 \text{ W MIN. WITH } 8.5 \text{ dB GAIN}$

DESCRIPTION

The SD1732 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class A operation in UHF and Band IV, V television transmitters and transposes.

Figure 1. Package

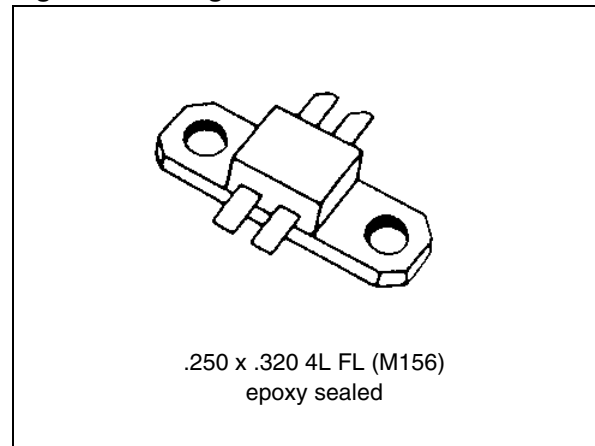


Figure 2. Pin Connection

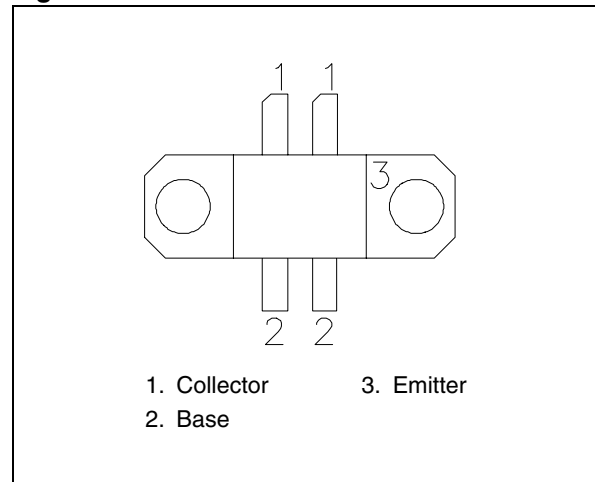


Table 1. Order Codes

Order Codes	Marking	Package	Packaging
SD1732 (TDS595)	SD1732	M156	BLACK CARDBOARDS

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Table 2. Absolute Maximum Ratings ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	45	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	2 x 2.6	A
P_{DISS}	Power Dissipation	65	W
T_J	Junction Temperature	+200	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}C$

Table 3. Thermal Data

Symbol	Parameter	Value	Unit
$R_{TH(j-c)}$	Junction-Case Thermal Resistance	2.5	$^{\circ}C/W$

ELECTRICAL SPECIFICATIONS ($T_{case} = 25^{\circ}C$)

Table 4. Static

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 20\text{ mA}; I_E = 0\text{ mA}$	45	—	—	V
BV_{CEO}	$I_C = 40\text{ mA}; I_B = 0\text{ mA}$	25	—	—	V
BV_{EBO}	$I_E = 5\text{ mA}; I_C = 0\text{ mA}$	3.0	—	—	V
h_{FE}	$V_{CE} = 20\text{ V}; I_C = 0.5\text{ A}$	10	—	—	—

Table 5. Dynamic

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 845\text{ MHz}; V_{CE} = 25\text{ V}; I_{CQ} = 2 \times 850\text{ mA}$	14	—	—	W
G_P	$P_{OUT} = 14\text{ W}; V_{CE} = 25\text{ V}; I_{CQ} = 2 \times 850\text{ mA}$	8.5	—	—	dB
$IMD_3^{(1)}$	$P_{OUT} = 14\text{ W}; V_{CE} = 25\text{ V}; I_{CQ} = 2 \times 850\text{ mA}$	—	-47	—	dBc
$CMD^{(2)}$	$P_{OUT} = 14\text{ W}; V_{CE} = 25\text{ V}; I_{CQ} = 2 \times 850\text{ mA}$	—	20	—	%
C_{OB}	$f = 1\text{ MHz}; V_{CB} = 25\text{ V}$	—	—	20	pF

Note: 1. IMD 3 Tone Testing

Vision Carrier -8 dB ref

Sound Carrier -7 dB ref

Sideband Carrier -16 dB ref

2. CMD: Cross Modulation Distortion of the Voltage Variation (%) of Sound Carrier When Vision Carrier is Switched from 0 to -20 dB

TYPICAL PERFORMANCE

Figure 3. Intermodulation Distortion & Cross Modulation Distortion vs Power Output

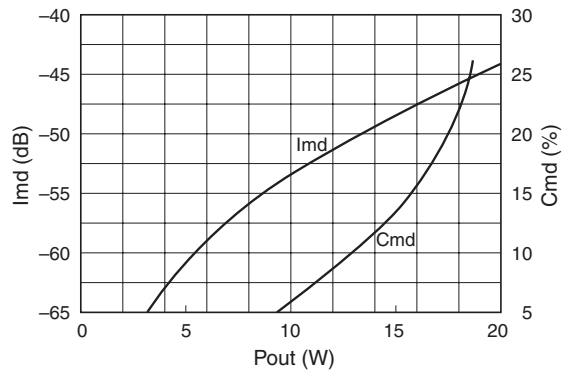


Figure 4. Power Output vs Power Input

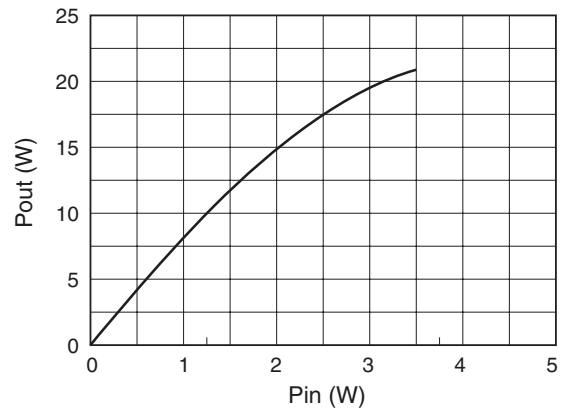


Figure 5. Broadband Power Gain vs Frequency

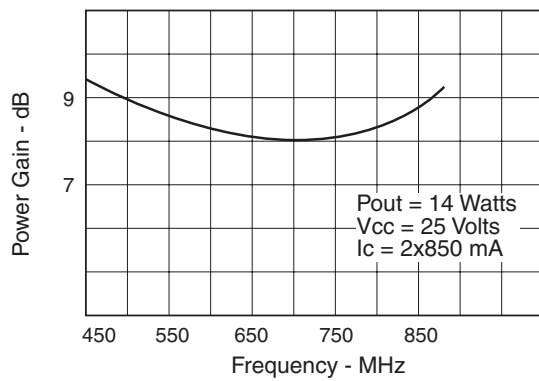


Figure 6. Thermal Resistance vs Case Temperature

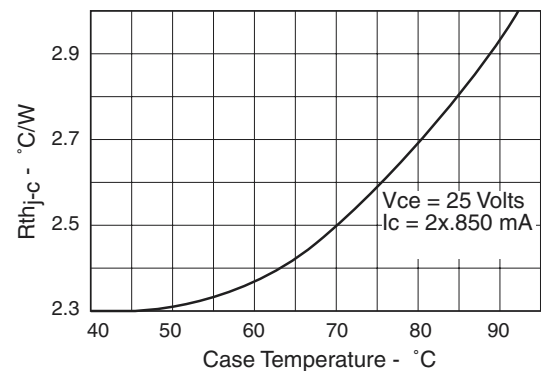
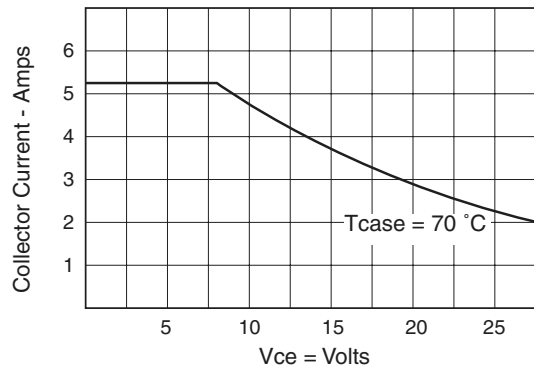
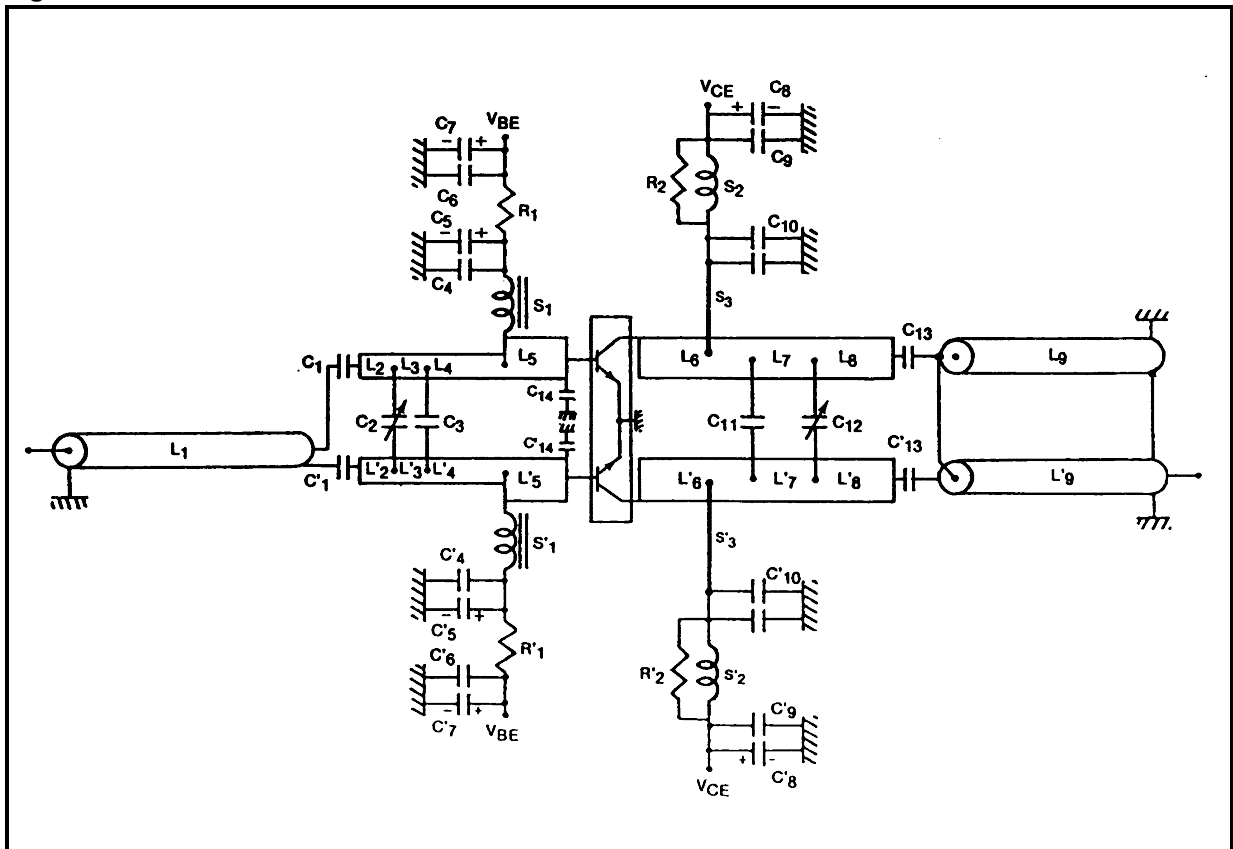


Figure 7. Safe Operating Area



TEST CIRCUIT

Figure 8. Test Circuit



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Table 6. Test Circuit

C1, C'1, C13, C'13	68pF, ATC 100A
C2	4.5pF Adjustable Johanson
C3	4.7pF, ATC 100A
C4, C'4, C6, C'6, C9, C'9, C10, C'10	100pF, ATC 100A + 1nF LCC Chip + 10nF LCC Chip
C5, C'5,	4.7μF, 25V, Tantalum Capacitor
C7, C'7,	10μF, 25V, Tantalum Capacitor
C8, C'8,	22μF, 35V, Tantalum Capacitor
C11	4.7pf, ATC 100A
C12	8pF Adjustable Johanson
C14, C'14,	22pF, ATC 100A
L1, L9, L'9	50Ω Coaxial Wire Diameter 2.2mm, Length 29mm on 70Ω Transmission Line
L2, L'2	50Ω Printed Transmission Line Length 4mm
L3, L'3	50Ω Printed Transmission Line Length 3mm
L4, L'4	50Ω Printed Transmission Line Length 9.5mm
L5, L'5	39Ω Printed Transmission Line Length 7mm
L6, L'6	39Ω Printed Transmission Line Length 15mm
L7, L'7	39Ω Printed Transmission Line Length 8mm
L8, L'8	39Ω Printed Transmission Line Length 10mm
R1, R'1	4.7Ω, 1/2W
R2, R'2	1207Ω, 1/2W
S1, S'1	470nH Molded
S2, S'2	5 Turns, Diameter Wire 0.5mm on 3mm I.D.
S3, S'3	Diameter Wire 1.2mm, Length 12mm
Substrate	Teflon Glass 30Mils, Er = 2.55

SUPPLY CIRCUIT

Figure 9. Supply Circuit - Class A Adjustable (per side)

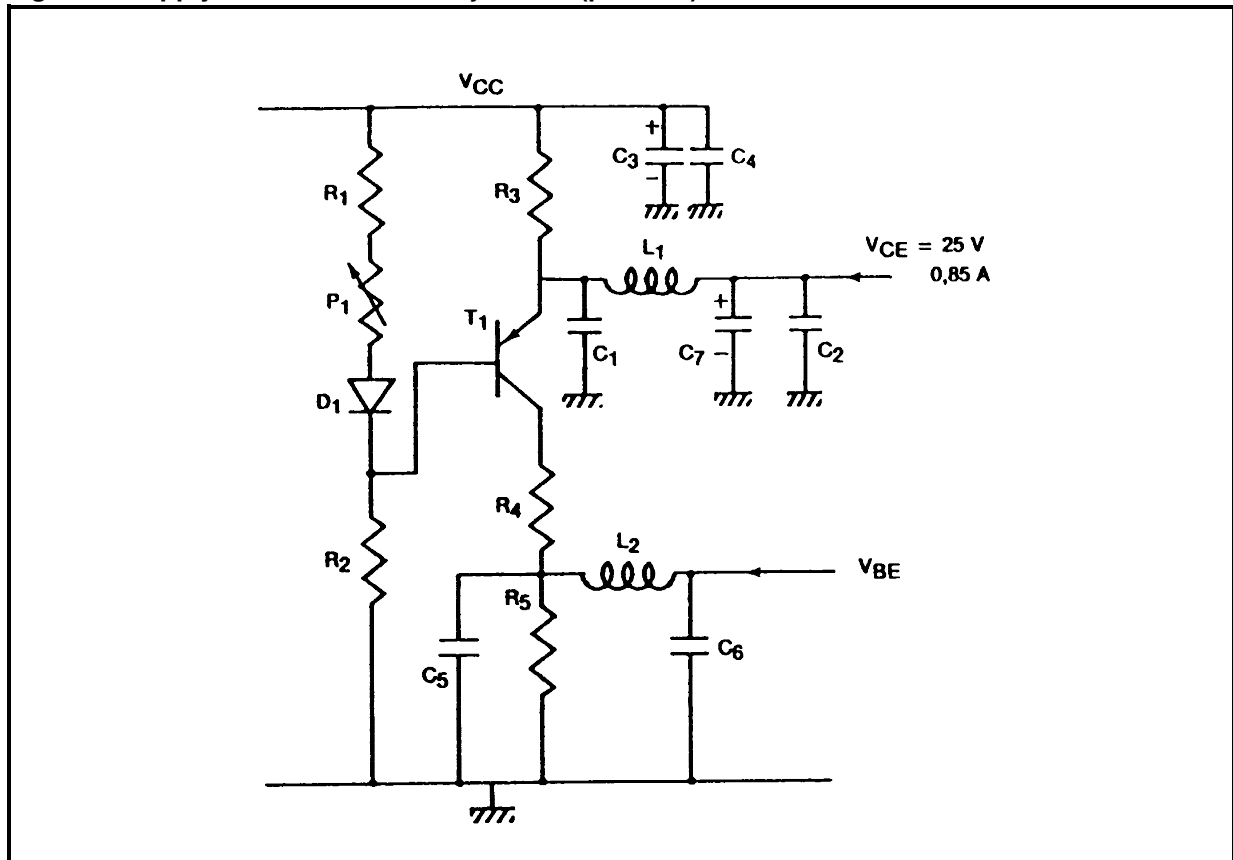
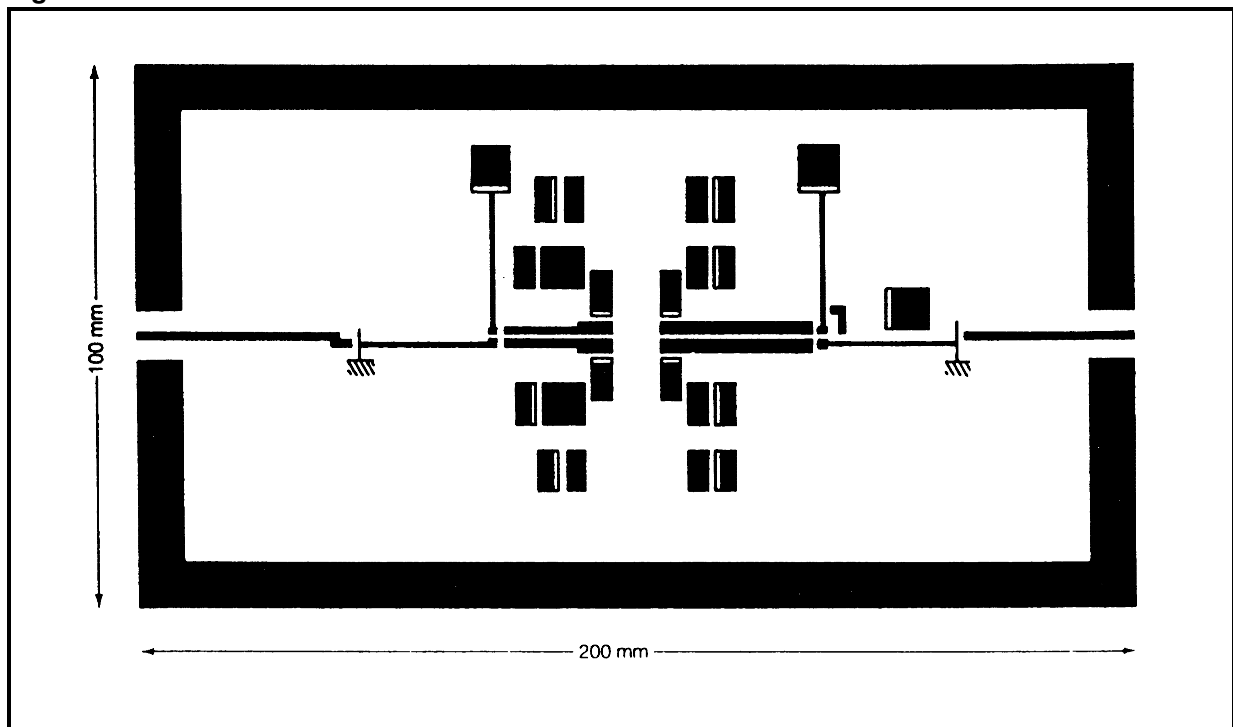


Table 7. Supply Circuit - Class A Adjustable (per side)

C1, C2, C4, C5, C6	1nF LCC Chip + 10nF LCC Chip
C3	100 μ F Sprague
C7	10 μ F Sprague
D1	1N 4001
L1, L2	5 Turns, 0.5mmWire on 3mm Internal Diameter
P1	1k Ω
R1	56 Ω , 1/2W
R2	5600 Ω , 1/2W
R3	2.2 Ω , 3W
R4, R5	56 Ω , 1W
T1	BDX 54 B

PHOTOMASTER OF TEST CIRCUIT

Figure 10. Photomaster of Test Circuit

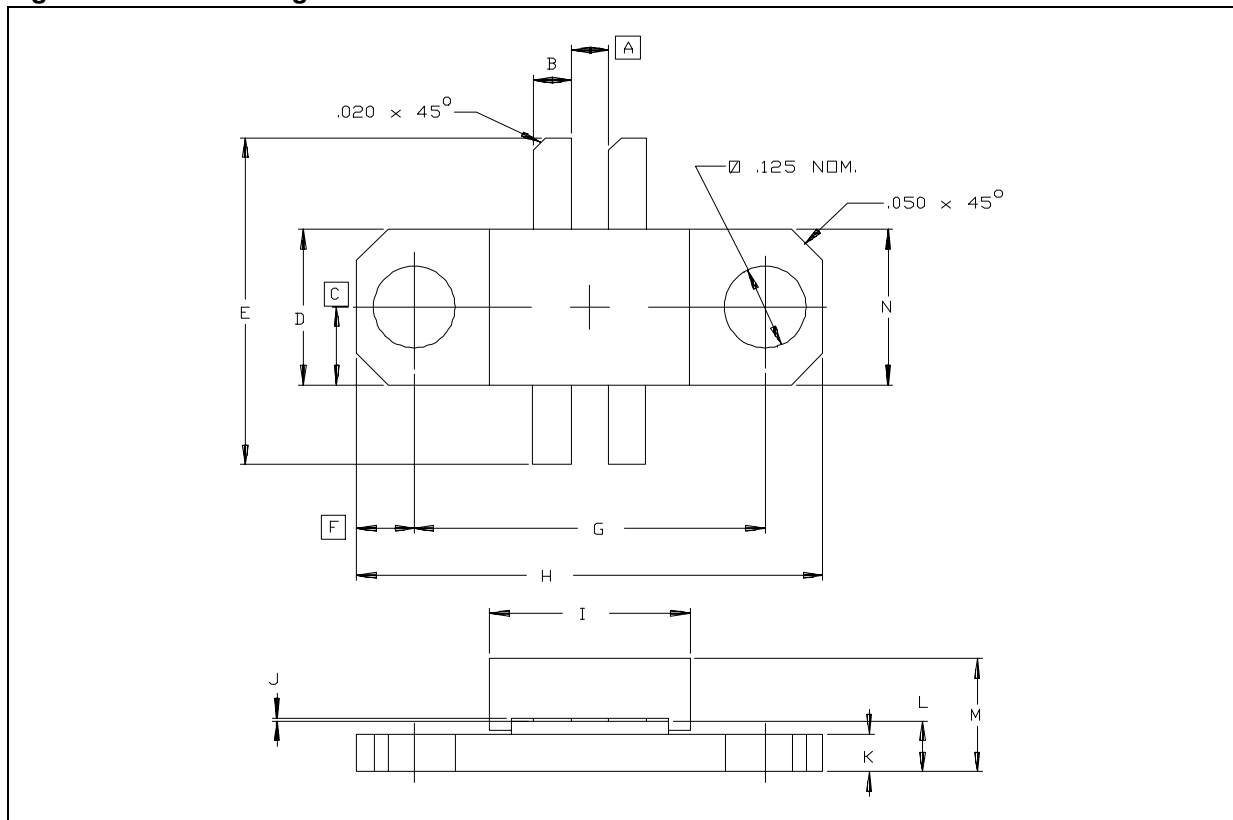


PACKAGE MECHANICAL

Table 8. M156 Mechanical Data

Symbol	millimeters			inches		
	Min	Typ	Max	Min	Typ	Max
A		1.52			0.060	
B	1.40		1.65	0.055		0.065
C		3.15			0.124	
D	6.17		6.43	0.243		0.253
E	16.13		16.89	0.635		0.665
F		2.34			0.092	
G	14.10		14.35	0.555		0.565
H	18.77		19.02	0.739		0.749
I	8.00		8.31	0.315		0.327
J	0.05		0.15	0.002		0.006
K	1.40		1.65	0.055		0.065
L	1.91		2.41	0.075		0.095
M			4.83			0.190
N	6.22		6.53	0.245		0.257

Figure 11. M156 Package Dimensions



Note: Drawing is not to scale.

REVISION HISTORY

Table 9. Revision History

Date	Revision	Description of Changes
November-1992	1	First Issue
10-June-2004	2	Stylesheet update. No content change.

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