



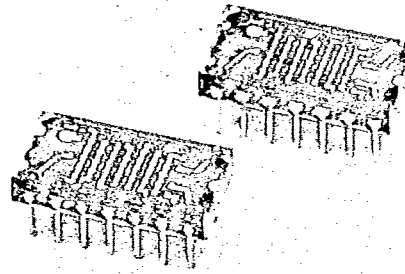
LTP-305 SERIES

0.3" 5 x 7 SINGLE COLOR DOT MATRIX DISPLAYS

T-41-35

FEATURES

- 0.3 INCH (7.62mm) MATRIX HEIGHT.
- CHOICE OF THREE BRIGHT COLORS-RED/
GREEN/HIGH EFFICIENCY RED.
- HIGH BRIGHTNESS.
- SINGLE PLANE, WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- 36 LIGHT EMITTING DIODES.
- LOW POWER REQUIREMENTS.
- 5 x 7 ARRAY WITH X-Y SELECT AND DECIMAL
POINT.
- COMPATIBLE WITH USASCII AND EBCDIC
CODES.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- EASY MOUNTING ON P.C. BOARD OR SOCKETS.



DESCRIPTION

The LTP-305 series are 0.3 inch (7.62mm) matrix height 5x7 dot matrix displays.

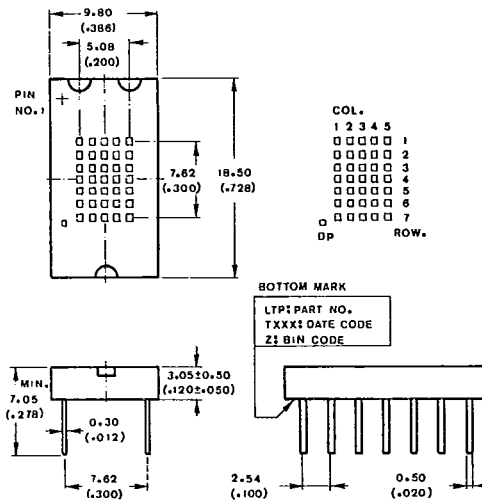
The red series devices utilize LED chips which are made from GaAsP on a GaAs substrate. The green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The high efficiency red series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate. Red displays have red package color. Green displays have green package color. High efficiency displays have red package color.

DEVICES

PART NO. LTP-			DESCRIPTION
RED	GREEN	HI-EFF RED	
305R	305G	305HR	Anode Column, Cathode Row; Lt. Hand Decimal

T-41-35

PACKAGE DIMENSIONS



NOTE: All dimensions are in $\frac{\text{millimeters}}{(\text{inches})}$ tolerance are:

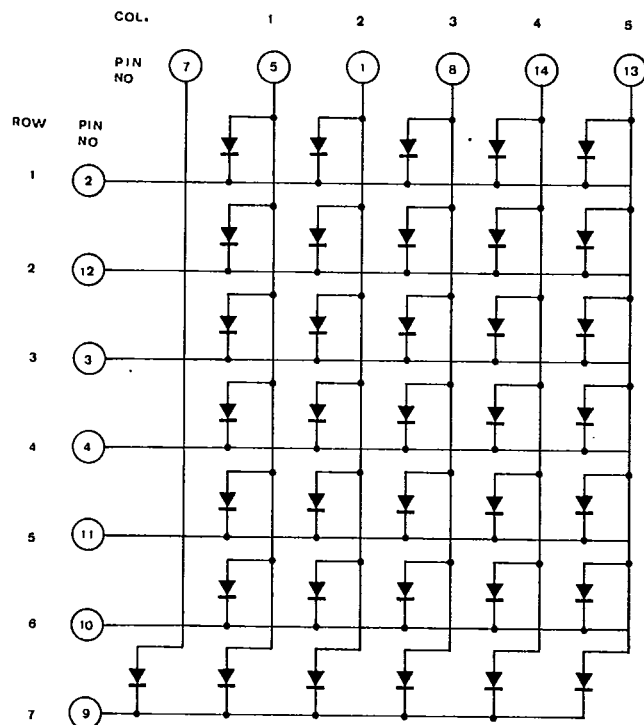
1. Lead length (from seating plane): minimum value $\frac{+1.00}{-0.000} \text{ mm}$ $\frac{+0.040''}{-0.000''}$
2. $\frac{\pm 0.25 \text{ mm}}{(0.010'')}$ unless otherwise noted.

PIN CONNECTION

PIN NO.	CONNECTION	PIN NO.	CONNECTION
1	Anode, Column 2	8	Anode, Column 3
2	Cathode, Row 1	9	Cathode, Row 7
3	Cathode, Row 3	10	Cathode, Row 6
4	Cathode, Row 4	11	Cathode, Row 5
5	Anode, Column 1	12	Cathode, Row 2
6	No Pin	13	Anode, Column 5
7	Anode, Decimal (Point)	14	Anode, Column 4



INTERNAL CIRCUIT DIAGRAM

ABSOLUTE MAXIMUM RATINGS AT $T_A = 25^\circ\text{C}$

PARAMETER	RED	GREEN	HI.-EFF. RED	UNIT
Power Dissipation Per Display	750	1000	1000	mW
Peak Forward Current Per Dot (1/10 Duty Cycle, 0.1ms Pulse Width)	100	60	60	mA
Continuous Forward Current Per Dot	20	20	20	mA
Derating Linear From 25°C Per Dot	0.25	0.25	0.25	mA/°C
Reverse Voltage Per Dot	5	5	5	V
Operating Temperature Range	-25°C to +85°C			
Storage Temperature Range	-25°C to +85°C			
Solder Temperature 1/16 inch Below Seating Plane for 3 Seconds at 260°C				

T-41-35

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$ LTP-305R

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous intensity	I_v	200	400		μcd	$I_F = 48\text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_p		655		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		24		nm	$I_F = 20\text{ mA}$
Forward Voltage any Dot	V_F		1.7	2.0	V	$I_F = 20\text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20\text{ mA}$

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

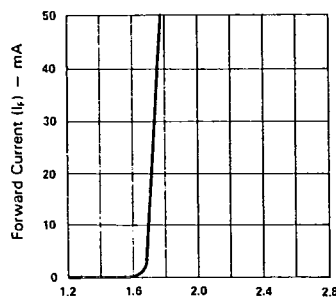


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

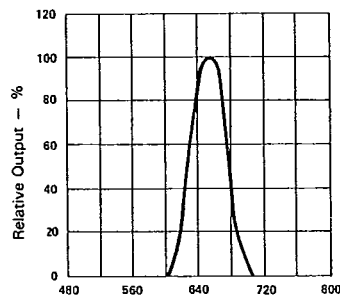


Fig. 2 SPECTRAL RESPONSE.

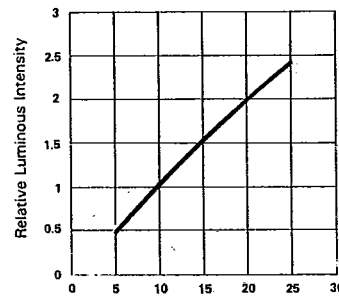


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

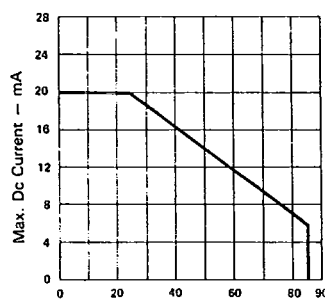


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

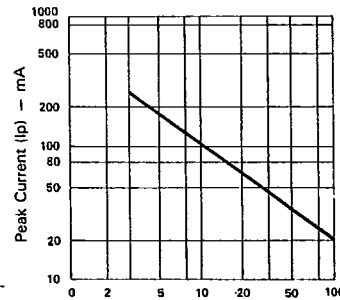


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - $F = 1\text{ KHz}$)

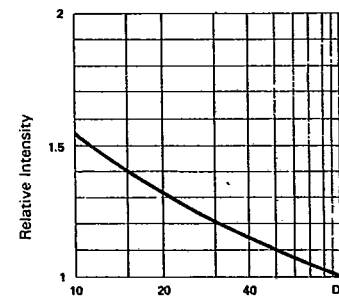


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{ mA}$ PER SEG.)

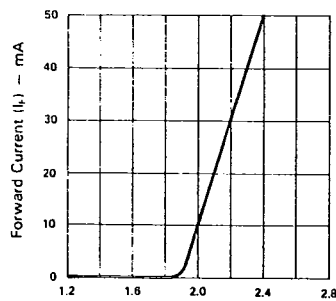


ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$ LTP-305G SERIES

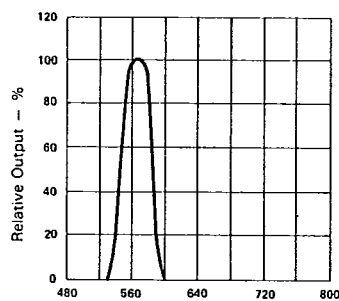
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous intensity	I_v	600	1600		μcd	$I_F = 48\text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_p		565		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		30		nm	$I_F = 20\text{ mA}$
Forward Voltage any Dot	V_F		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20\text{ mA}$

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

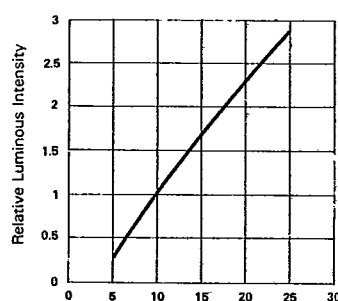
(25°C Ambient Temperature Unless Otherwise Noted)



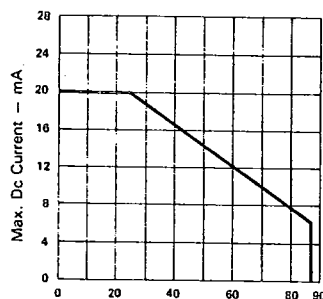
Forward Voltage (V_F) — Volts
Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



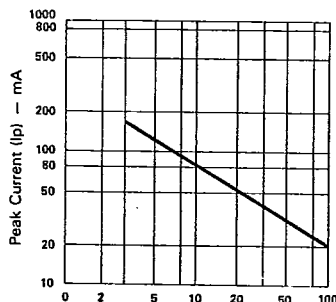
Wavelength (λ) — nm.
Fig. 2 SPECTRAL RESPONSE.



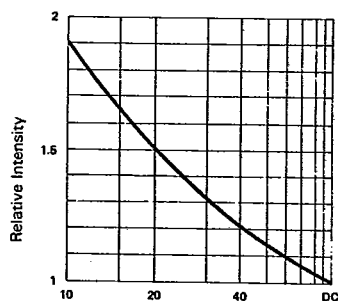
Forward Current (I_F) — mA
Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



Ambient Temperature (T_A) — $^\circ\text{C}$
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — $F = 1\text{ KHz}$)



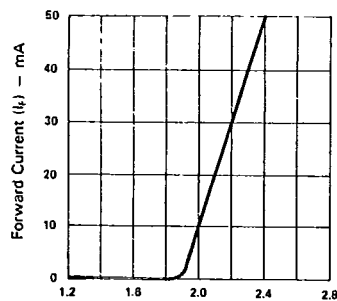
Duty Cycle %
Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{ mA}$ PER SEG.)

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$ LTP-305HR SERIES

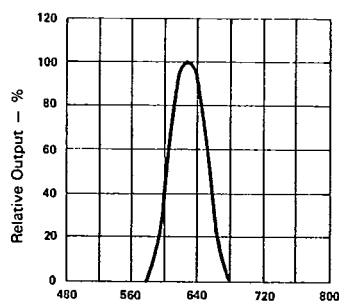
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous intensity	I_v	600	1600		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_p		635		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I_F = 20 \text{ mA}$
Forward Voltage any Dot	V_F		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

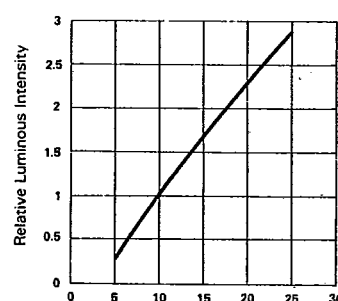
(25°C Ambient Temperature Unless Otherwise Noted)



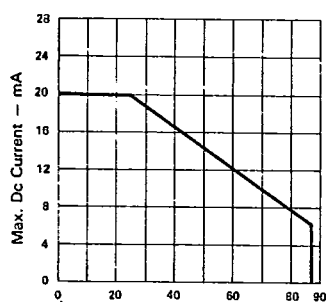
Forward Voltage (V_F) — Volts
Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



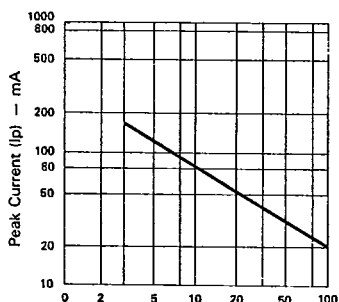
Wavelength (λ) — nm.
Fig. 2 SPECTRAL RESPONSE.



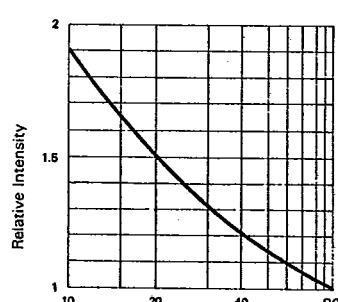
Forward Current (I_F) — mA
Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



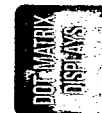
Ambient Temperature (T_A) — $^\circ\text{C}$
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — $F = 1 \text{ KHz}$)



Duty Cycle %
Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10 \text{ mA PER SEG.}$)



PACKAGING

T-90-20

Reel Packaging (Axial Lead Units)

DEVICE TYPE	COMPONENT SPACE (MM) "A"	TAPE SPACE (MM) "B"	REEL DIA (MM) "D"	QUANTITY (EA)		CARTON	
				REEL	CARTON	SIZE (MM)	WEIGHT (KG)
DO-41 DO-41L	5±0.5	52.4±1.5	326~336	5000	20K	355 x 355 x 355	10.5
DO-201AD	10±0.5	52.4±1.5	326~336	1200	4.8K	355 x 355 x 355	9.0
P6(Aleg)	10±0.5	52.4±1.5	326~336	700	2.8K	355 x 355 x 355	8.8

The C dimension of Fig. 3 is between 3.17mm and 635mm greater than the length of the component involved.

FIG. 1

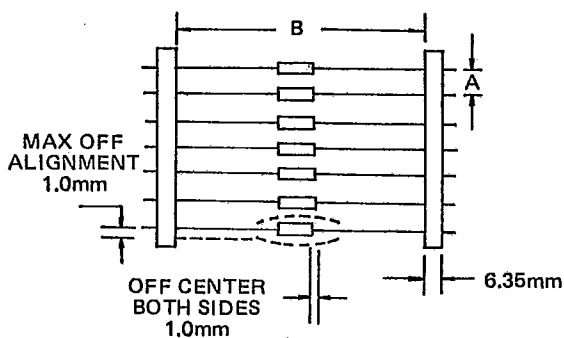


FIG. 2

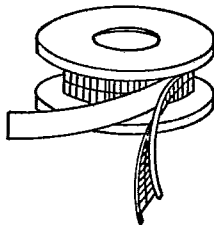
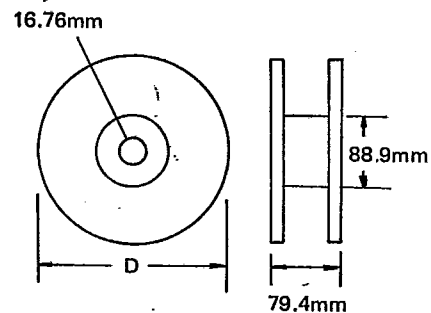


FIG. 3

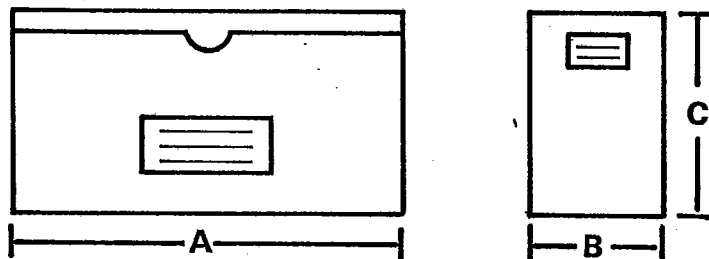


Bulk Packaging (Axial Lead Devices and Bridge Rectifiers)

DEVICE TYPE	PACKAGING SIZE (MM)		QUANTITY (EA)		APPROX GROSS WEIGHT (KG)	
	BOX	CARTON	BOX	CARTON	BOX	CARTON
DO-41 DO-41L	196 x 84 x 20	450 x 210 x 250	1000	50K	0.38	20
DO-201AD	305 x 93 x 59	355 x 355 x 355	1000	20K	1.35	28
P6(Aleg)	305 x 93 x 59	355 x 355 x 355	500	10K	1.2	24.5
PBM	357 x 125 x 60	530 x 360 x 340	1000	20K	1.5	32.3
PBDF	495 x 155 x 145	500 x 325 x 305	5000	20K	5.1	21.5
PBP	357 x 125 x 60	530 x 360 x 340	500	10K	1.5	31.5
PBL	375 x 220 x 155	470 x 385 x 455	1000	5K	5.7	30.5
PBPC-6	357 x 125 x 60	560 x 360 x 340	250	5K	1.1	22
PBPC-8	357 x 125 x 60	560 x 360 x 340	250	5K	1.7	35
KBPC	375 x 220 x 365	470 x 390 x 385	500	1K	15.1	31.5
KBPC-W	375 x 220 x 365	470 x 390 x 385	500	1K	14.5	30.0

AMMO BOX PACKAGING

BOX SIZE



Unit:m. m.

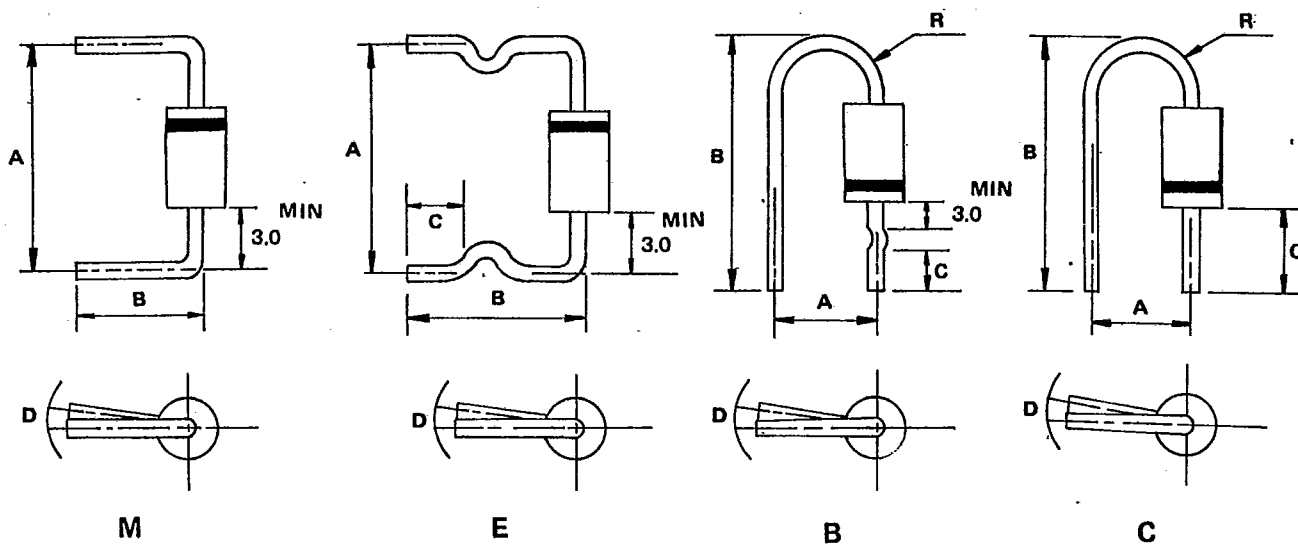
Packaging	Products Outline	Dimension *A*	Dimension *B*	Dimension *C*	Q'ty per BOX
26MM Horizontal Ammo Pack	DO-41 DO-41L(0.6mm Lead)	255	50	95	3K
					3K
52MM Horizontal Ammo Pack	DO-41and DO-41L DO 201AD	250	75	92	3K
					0.8K

CARTON SIZE

Unit:m. m.

Packaging	Products Outline	length	Width	High	Q'ty Per Carton
26MM Horizontal Ammo Pack	DO-41 DO-41L(0.6mm Lead)	330	310	268	42K
					48K
52MM Horizontal Ammo Pack	DO-41and DO-41L DO 201AD	355	355	340	12K
					12K

PREFORMED LEAD DRAWING



Case type	Preformed type	A (mm)		B (mm)		C (mm)		D (mm)		R (mm)	
		range	tolerance	range	tolerance	range	tolerance	range	tolerance	range	tolerance
D041	M	9.0-20.0	1.0	8.0-22.0	±0.5	—	—	1.5	max	—	—
	E	11.0-20.0	±1.0	11.0-16.0	±1.0	4.0-5.0	±0.5	1.5	max	—	—
	B	7.5	±0.5	19.0-22.0	±0.5	7.5	±0.5	1.5	max	2.5-4.0	Typ
	C	4.5	±0.8	18.0-19.0	±0.5	9.0	±0.5	1.5	max	2.5-4.0	Typ
D0201AD	M	15.0-20.0	±1.0	8.0-22.0	±1.0	—	—	2.0	max	—	—
	E	15.0-20.0	±1.0	10.0-22.0	±1.0	3.0-15.0	±0.5	2.0	max	—	—
P6(Aleg)	M	15.0-20.0	±1.0	8.0-22.0	±1.0	—	—	2.0	max	—	—