# High accurate, Low noise, Ultra small package ME6219 Series

## General Description

ME6219 series are highly accurate, low noise, CMOS LDO voltage regulators. Offering low output noise, high ripple rejection ratio, low dropout, the ME6219 series is ideal for today's cutting edge mobile phone. The ME6219 series is also fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability. This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies . The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

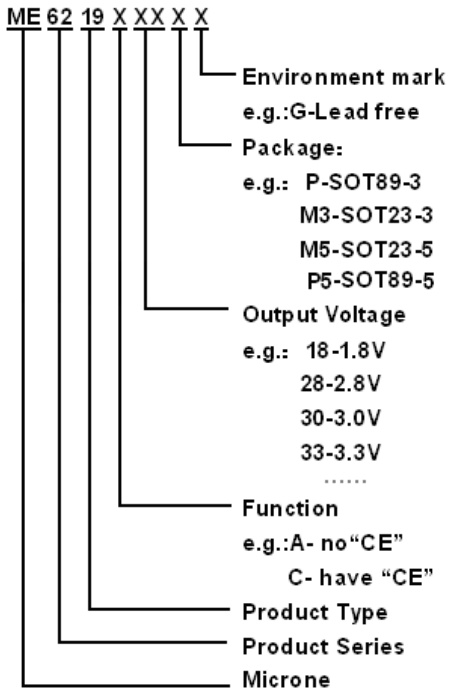
## Features

- Highly accurate:±2%
- Operating voltage range:1.2V~5.0V (selectable in 0.1V steps)
- Power consumption:65uA (TYP.)
- Large output current:300mA（$V_{IN}$＝4.3V,$V_{OUT}$＝3.3V）
- Input stability:0.05%/V(TYP.)
- Packages：SOT23-3,SOT89-3,SOT23-5,SOT89-5

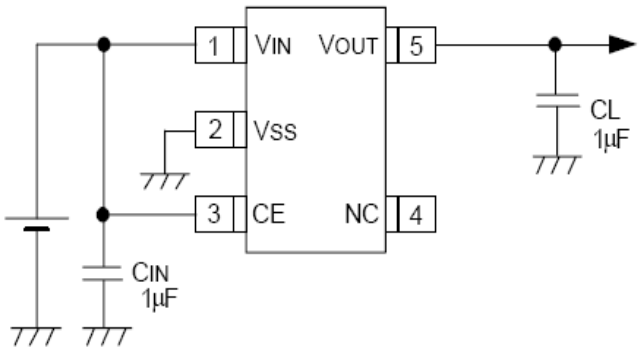
## Typical Application

- Mobile phones
- Cordless phones, radio communication equipment
- Portable games
- Cameras, Video cameras
- Reference voltage sources
- Battery powered equipment

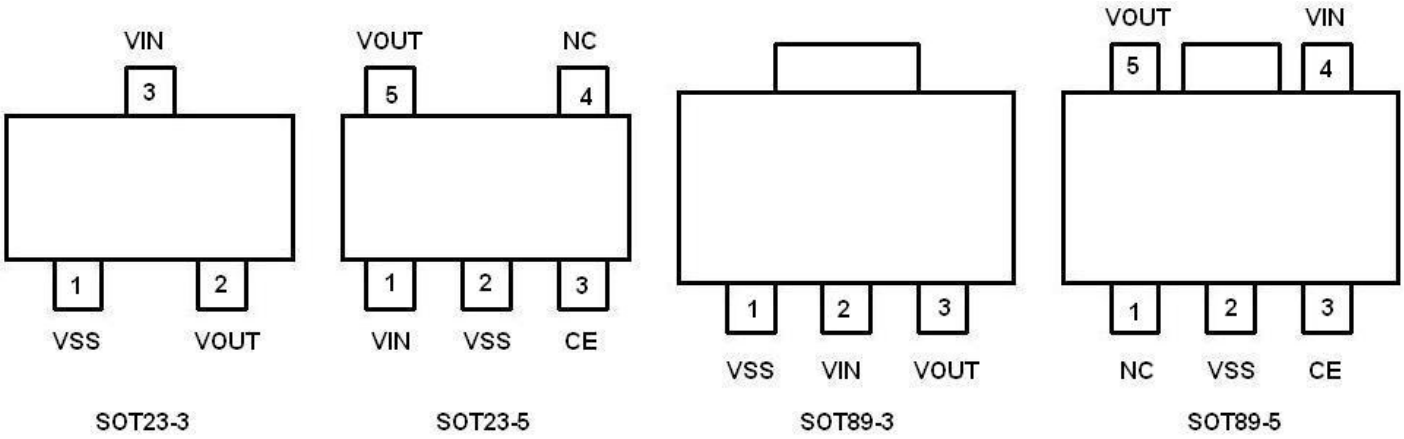
## Selection Guide




## Typical Application Circuit



## Pin Configuration




## Pin Assignment

ME6219Axx

| Pin Number | | | Pin Name | Functions |
|---|---|---|---|---|
| SOT23-3 | SOT23-3* | SOT89-3 | | |
| 1 | 2 | 1 | $V_{SS}$ | Ground |
| 2 | 1 | 3 | $V_{OUT}$ | Output |
| 3 | 3 | 2 | $V_{IN}$ | Input |

ME6219Cxx

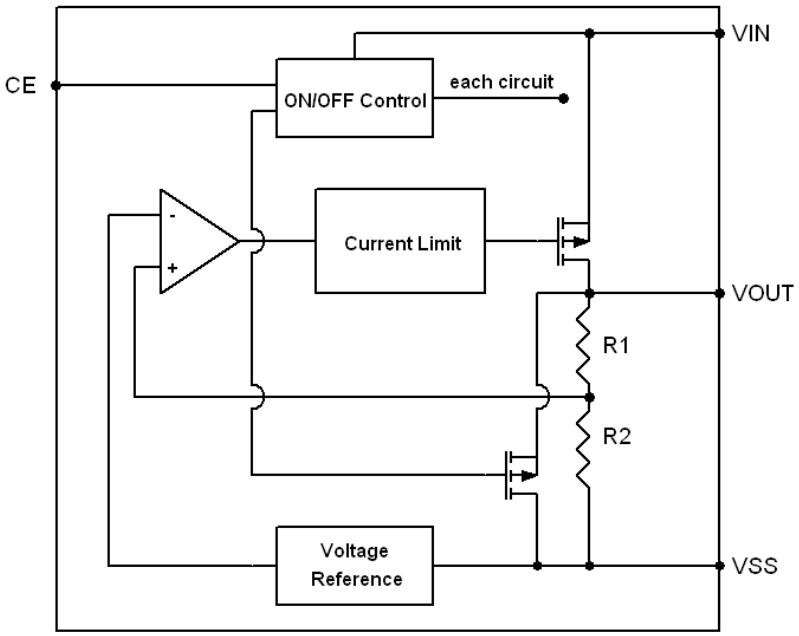
| Pin Number | | | Pin Name | Functions |
|---|---|---|---|---|
| SOT23-5 | SOT23-5* | SOT89-5 | | |
| 1 | 5 | 4 | $V_{IN}$ | Input |
| 2 | 2 | 2 | $V_{SS}$ | Ground |
| 3 | 1 | 3 | CE | ON/OFF Switch |
| 4 | 3 | 1 | NC | No Connection |
| 5 | 4 | 5 | $V_{OUT}$ | Output |

*:Special pin array

## Absolute Maximum Ratings

| Parameter | | Symbol | Ratings | Units |
|---|---|---|---|---|
| Input Voltage | | $V_{IN}$ | 6.5 | V |
| Output Current | | $I_{OUT}$ | 500 | mA |
| Output Voltage | | $V_{OUT}$ | Vss-0.3 ~ Vout+0.3 | V |
| CE pin Voltage | | $V_{CE}$ | Vss-0.3 ~ Vout+0.3 | V |
| Power Dissipation | SOT23 | $P_D$ | 250 | mW |
| | SOT89 | $P_D$ | 500 | mW |
| Operating Ambient Temperature | | T | -25 ~ +85 | ℃ |
| Storage Temperature | | $T_{STG}$ | -40 ~ +125 | ℃ |
| Soldering Temperature And Time | | $T_{SOLDER}$ | 260℃, 10s | |

## Block Diagram



## Electrical Characteristics

### ME6219C12

($V_{IN}$=$V_{OUT}$+1V,$V_{CE}$=$V_{IN}$,$C_{IN}$=$C_{OUT}$=1uF,Ta=25°C Unless otherwise stated)

| Parameter | Symbol | Conditions | Min | TYP. | MAX | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$(E) (Note 2) | $I_{OUT}$=10mA, $V_{IN}$=Vout+1V | X 0.98 | $V_{OUT}$(T) (Note 1) | X 1.02 | V |
| Maximum Output Current | $I_{OUT}$ (max) | $V_{IN}$=Vout+1V | | 130 | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$=Vout+1V, 1mA≤$I_{OUT}$≤100mA | | 30 | | mV |
| Dropout Voltage (Note 3) | $V_{dif1}$ | $I_{OUT}$ =50mA | | 750 | | mV |
| | $V_{dif2}$ | $I_{OUT}$ =100mA | | 800 | | mV |
| Supply Current | $I_{SS}$ | $V_{IN}$=Vout+1V | | 65 | | μA |
| Stand-by Current | $I_{CEL}$ | Vce＝0V | | 0.1 | 1 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$ | $I_{OUT}$ =40mA Vout+1V ≤$V_{IN}$≤6.5V | | 0.05 | | %/V |
| CE “High” Voltage | VCEH | Start up | 0.6 | | | V |
| CE “Low” Voltage | VCEL | Shut down | | | 0.5 | V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC $I_{OUT}$ =50mA,f=1kHz | | 62 | | dB |
| Output noises | en | $I_{OUT}$ =40mA，300Hz~50kHz | | 50 | | uVrms |

### ME6219C18

($V_{IN}$=$V_{OUT}$+1V,$V_{CE}$=$V_{IN}$,$C_{IN}$=$C_{OUT}$=1uF,Ta=25°C Unless otherwise stated)

| Parameter | Symbol | Conditions | Min | TYP. | MAX | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$(E) (Note 2) | $I_{OUT}$=10mA, $V_{IN}$=Vout+1V | X 0.98 | $V_{OUT}$(T) (Note 1) | X 1.02 | V |
| Maximum Output Current | $I_{OUT}$ (max) | $V_{IN}$=Vout+1V | | 200 | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$=Vout+1V, 1mA≤$I_{OUT}$≤100mA | | 30 | | mV |
| Dropout Voltage (Note 3) | $V_{dif1}$ | $I_{OUT}$ =100mA | | 210 | | mV |
| | $V_{dif2}$ | $I_{OUT}$ =200mA | | 420 | | mV |
| Supply Current | $I_{SS}$ | $V_{IN}$=Vout+1V | | 65 | | μA |
| Stand-by Current | $I_{CEL}$ | Vce＝0V | | 0.1 | 1 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$ | $I_{OUT}$ =40mA Vout+1V ≤$V_{IN}$≤6.5V | | 0.05 | | %/V |
| CE “High” Voltage | VCEH | Start up | 0.6 | | | V |
| CE “Low” Voltage | VCEL | Shut down | | | 0.5 | V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC $I_{OUT}$ =50mA,f=1kHz | | 62 | | dB |
| Output noises | en | $I_{OUT}$ =40mA，300Hz~50kHz | | 50 | | uVrms |

**ME6219C25**

($V_{IN}$=$V_{OUT}$+1V,$V_{CE}$=$V_{IN}$,$C_{IN}$=$C_{OUT}$=1uF,Ta=25$^{O}$C Unless otherwise stated)

| Parameter | Symbol | Conditions | Min | TYP. | MAX | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$(E) (Note 2) | $I_{OUT}$=10mA, $V_{IN}$=Vout+1V | X 0.98 | $V_{OUT}$(T) (Note 1) | X 1.02 | V |
| Maximum Output Current | $I_{OUT}$ (max) | $V_{IN}$=Vout+1V | | 250 | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$=Vout+1V, 1mA≤$I_{OUT}$≤100mA | | 30 | | mV |
| Dropout Voltage (Note 3) | $V_{dif1}$ | $I_{OUT}$ =100mA | | 170 | | mV |
| | $V_{dif2}$ | $I_{OUT}$ =200mA | | 350 | | mV |
| Supply Current | $I_{SS}$ | $V_{IN}$=Vout+1V | | 65 | | μA |
| Stand-by Current | $I_{CEL}$ | Vce＝0V | | 0.1 | 1 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$ | $I_{OUT}$ =40mA Vout+1V ≤$V_{IN}$≤6.5V | | 0.05 | | %/V |
| CE “High” Voltage | VCEH | Start up | 0.6 | | | V |
| CE “Low” Voltage | VCEL | Shut down | | | 0.5 | V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC $I_{OUT}$ =50mA,f=1kHz | | 62 | | dB |
| Output noises | en | $I_{OUT}$ =40mA，300Hz~50kHz | | 50 | | uVrms |

**ME6219C28**

($V_{IN}$=$V_{OUT}$+1V,$V_{CE}$=$V_{IN}$,$C_{IN}$=$C_{OUT}$=1uF,Ta=25$^{O}$C Unless otherwise stated)

| Parameter | Symbol | Conditions | Min | TYP. | MAX | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$(E) (Note 2) | $I_{OUT}$=10mA, $V_{IN}$=Vout+1V | X 0.98 | $V_{OUT}$(T) (Note 1) | X 1.02 | V |
| Maximum Output Current | $I_{OUT}$ (max) | $V_{IN}$=Vout+1V | | 300 | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$=Vout+1V, 1mA≤$I_{OUT}$≤100mA | | 30 | | mV |
| Dropout Voltage (Note 3) | $V_{dif1}$ | $I_{OUT}$ =100mA | | 180 | | mV |
| | $V_{dif2}$ | $I_{OUT}$ =200mA | | 320 | | mV |
| Supply Current | $I_{SS}$ | $V_{IN}$=Vout+1V | | 65 | | μA |
| Stand-by Current | $I_{CEL}$ | Vce＝0V | | 0.1 | 1 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$ | $I_{OUT}$ =40mA Vout+1V ≤$V_{IN}$≤6.5V | | 0.05 | | %/V |
| CE “High” Voltage | VCEH | Start up | 0.6 | | | V |
| CE “Low” Voltage | VCEL | Shut down | | | 0.5 | V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC $I_{OUT}$ =50mA,f=1kHz | | 62 | | dB |
| Output noises | en | $I_{OUT}$ =40mA，300Hz~50kHz | | 50 | | uVrms |

**ME6219C30**

($V_{IN}$=$V_{OUT}$+1V,$V_{CE}$=$V_{IN}$,$C_{IN}$=$C_{OUT}$=1uF,Ta=25$^{O}$C Unless otherwise stated)

| Parameter | Symbol | Conditions | Min | TYP. | MAX | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$(E) (Note 2) | $I_{OUT}$=10mA, $V_{IN}$=Vout+1V | X 0.98 | $V_{OUT}$(T) (Note 1) | X 1.02 | V |
| Maximum Output Current | $I_{OUT}$ (max) | $V_{IN}$=Vout+1V | | 300 | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$=Vout+1V, 1mA≤$I_{OUT}$≤100mA | | 30 | | mV |
| Dropout Voltage (Note 3) | $V_{dif1}$ | $I_{OUT}$ =100mA | | 160 | | mV |
| | $V_{dif2}$ | $I_{OUT}$ =200mA | | 330 | | mV |
| Supply Current | $I_{SS}$ | $V_{IN}$=Vout+1V | | 65 | | μA |
| Stand-by Current | $I_{CEL}$ | Vce＝0V | | 0.1 | 1 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$ | $I_{OUT}$ =40mA Vout+1V ≤$V_{IN}$≤6.5V | | 0.05 | | %/V |
| CE “High” Voltage | VCEH | Start up | 0.6 | | | V |
| CE “Low” Voltage | VCEL | Shut down | | | 0.5 | V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC $I_{OUT}$ =50mA,f=1kHz | | 62 | | dB |
| Output noises | en | $I_{OUT}$ =40mA，300Hz~50kHz | | 50 | | uVrms |

**ME6219C33**

($V_{IN}$=$V_{OUT}$+1V,$V_{CE}$=$V_{IN}$,$C_{IN}$=$C_{OUT}$=1uF,Ta=25$^{O}$C Unless otherwise stated)

| Parameter | Symbol | Conditions | Min | TYP. | MAX | Units |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$(E) (Note 2) | $I_{OUT}$=10mA, $V_{IN}$=Vout+1V | X 0.98 | $V_{OUT}$(T) (Note 1) | X 1.02 | V |
| Maximum Output Current | $I_{OUT}$ (max) | $V_{IN}$=Vout+1V | | 300 | | mA |
| Load Regulation | $\Delta V_{OUT}$ | $V_{IN}$=Vout+1V, 1mA≤$I_{OUT}$≤100mA | | 30 | | mV |
| Dropout Voltage (Note 3) | $V_{dif1}$ | $I_{OUT}$ =100mA | | 180 | | mV |
| | $V_{dif2}$ | $I_{OUT}$ =200mA | | 310 | | mV |
| Supply Current | $I_{SS}$ | $V_{IN}$=Vout+1V | | 65 | | μA |
| Stand-by Current | $I_{CEL}$ | Vce＝0V | | 0.1 | 1 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$ | $I_{OUT}$ =40mA Vout+1V ≤$V_{IN}$≤6.5V | | 0.05 | | %/V |
| CE “High” Voltage | VCEH | Start up | 0.6 | | | V |
| CE “Low” Voltage | VCEL | Shut down | | | 0.5 | V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC $I_{OUT}$ =50mA,f=1kHz | | 62 | | dB |
| Output noises | en | $I_{OUT}$ =40mA，300Hz~50kHz | | 50 | | uVrms |

Note：

1. $V_{OUT}$ (T) ： Specified Output Voltage
2. $V_{OUT}$ (E)： Effective Output Voltage ( Ie. The output voltage when "$V_{OUT}$ (T)+1.0V"is provided at the $V_{IN}$ pin while maintaining a certain $I_{OUT}$ value.)
3. $V_{DIF}$ ： $V_{IN1}$ –$V_{OUT}$ (E)'

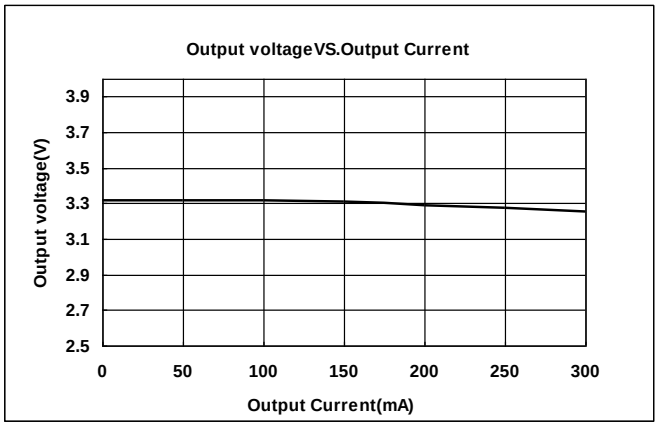
   $V_{IN1}$ ： The input voltage when $V_{OUT}$(E)' appears as input voltage is gradually decreased.

   $V_{OUT}$ (E)'=A voltage equal to 98% of the output voltage whenever an amply stabilized $I_{OUT}$ {$V_{OUT}$ (T)+1.0V} is input.

## Type Characteristics

（1）Output Current VS.Output Voltage（VIN=Vout+1, **Ta = 25 °C**）

ME6219C33M5G

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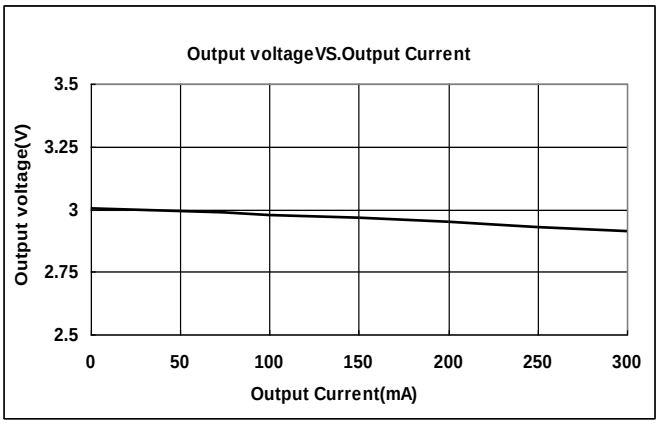


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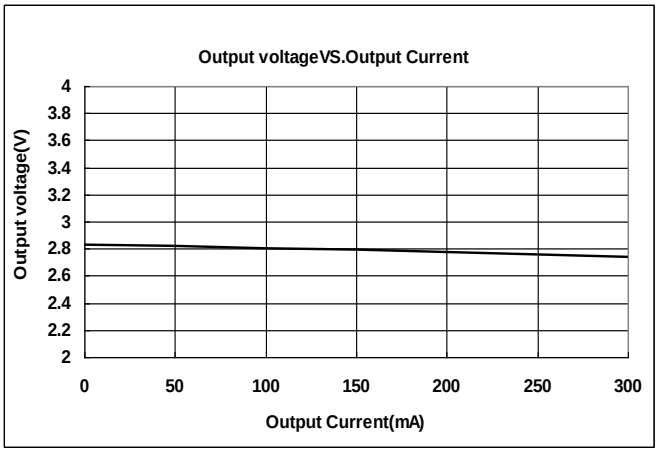


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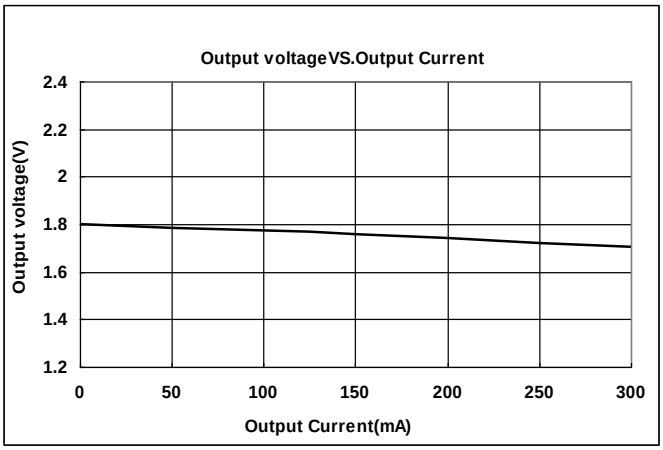
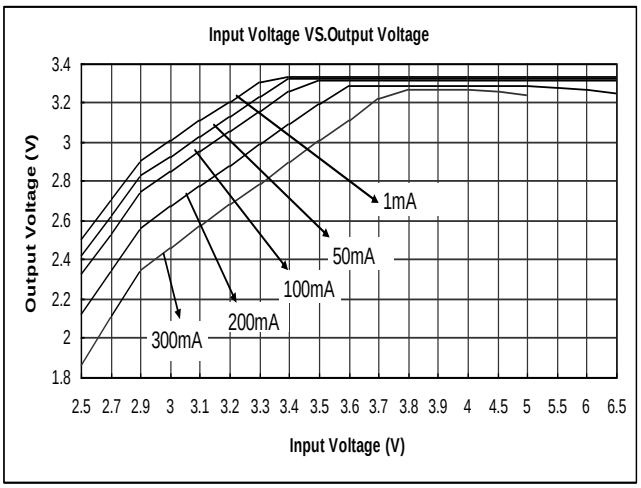


（2）Input Voltage VS.Output Voltage（**Ta = 25 °C**）

ME6219C33M5G

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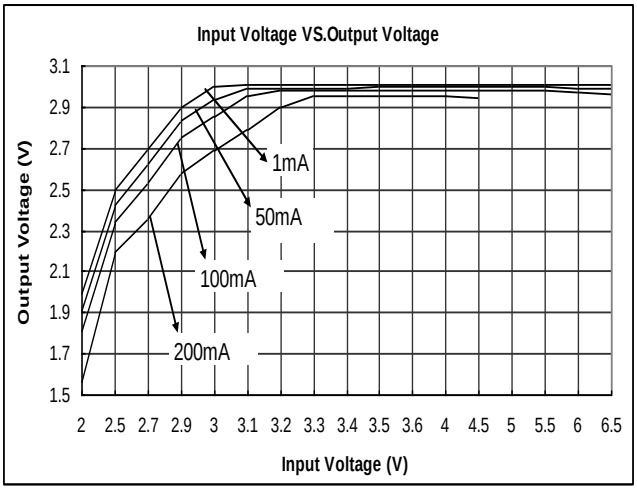


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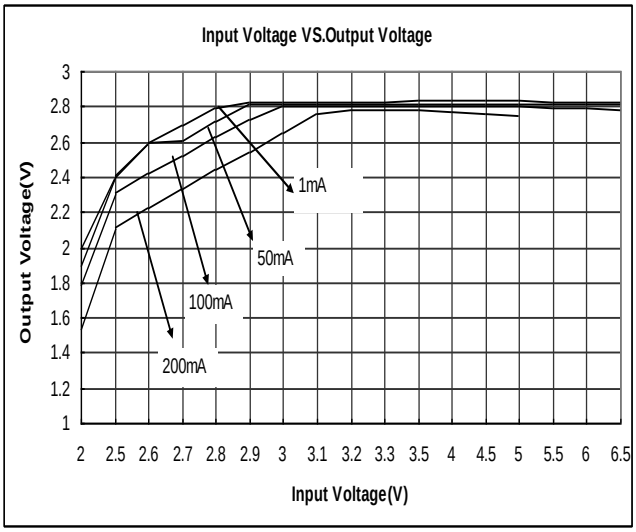


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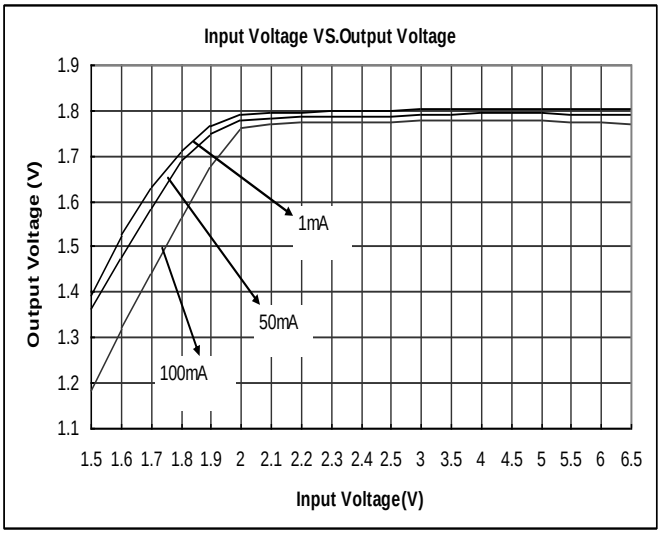
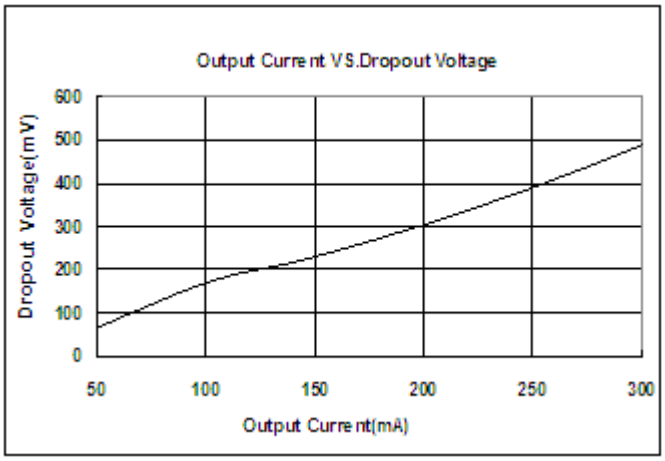


（3）Output Current VS. Dropout Voltage（VIN=Vout+1V,**Ta = 25 °C**）

ME6219C33M5G

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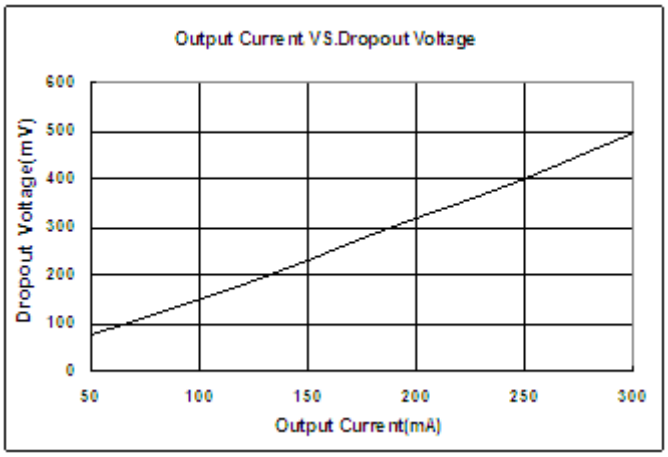


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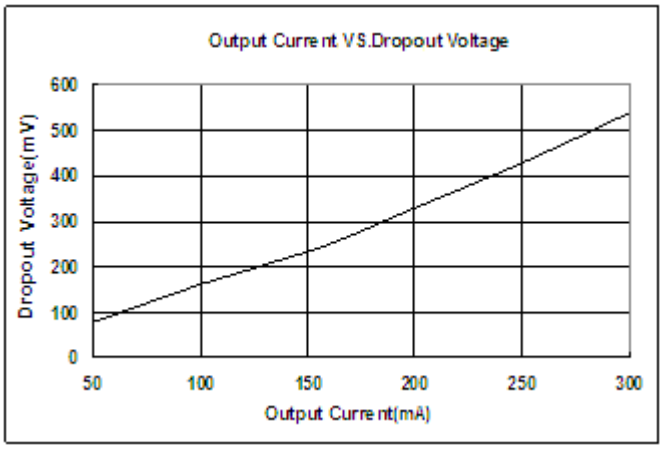


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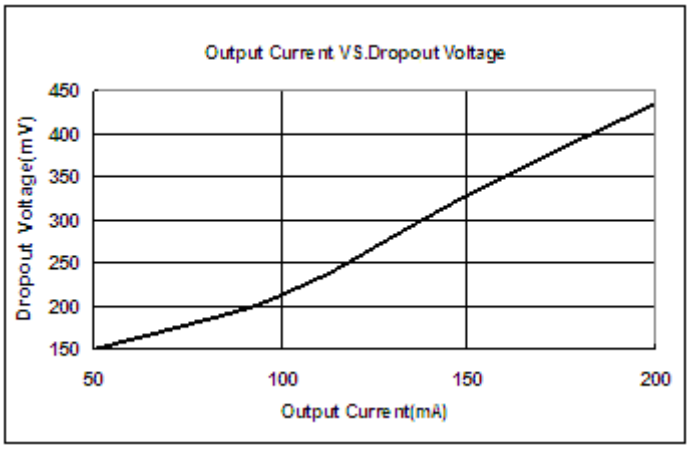
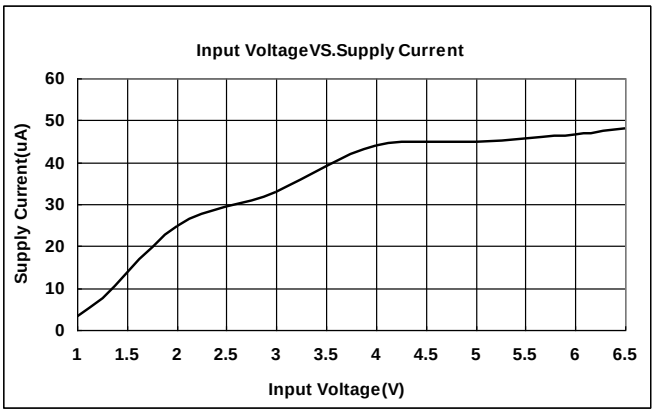


（4）Input Voltage VS. Supply Current（**Ta = 25 °C**）

ME6219C33M5G

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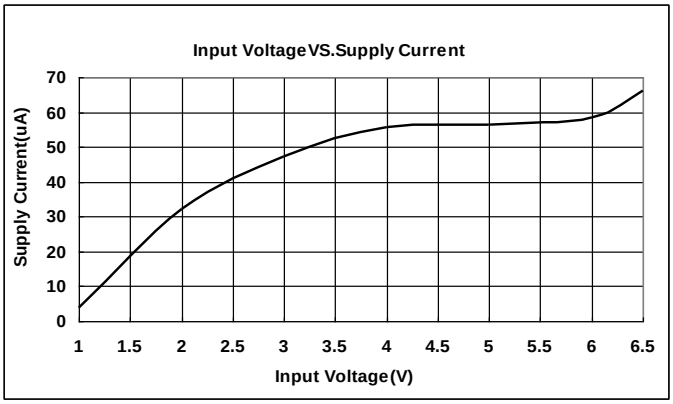


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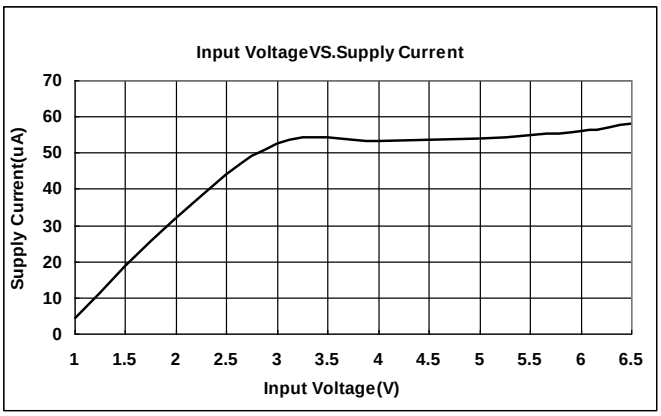


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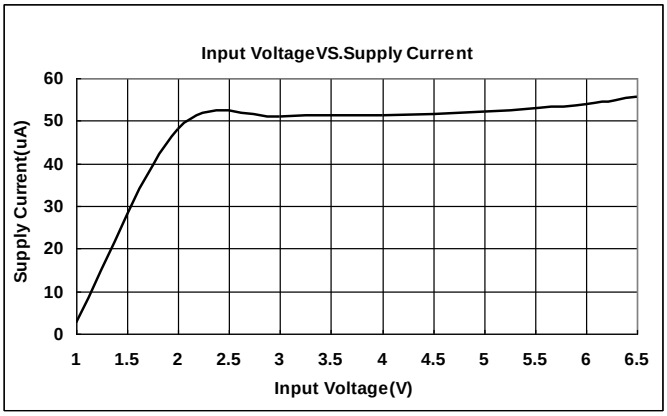
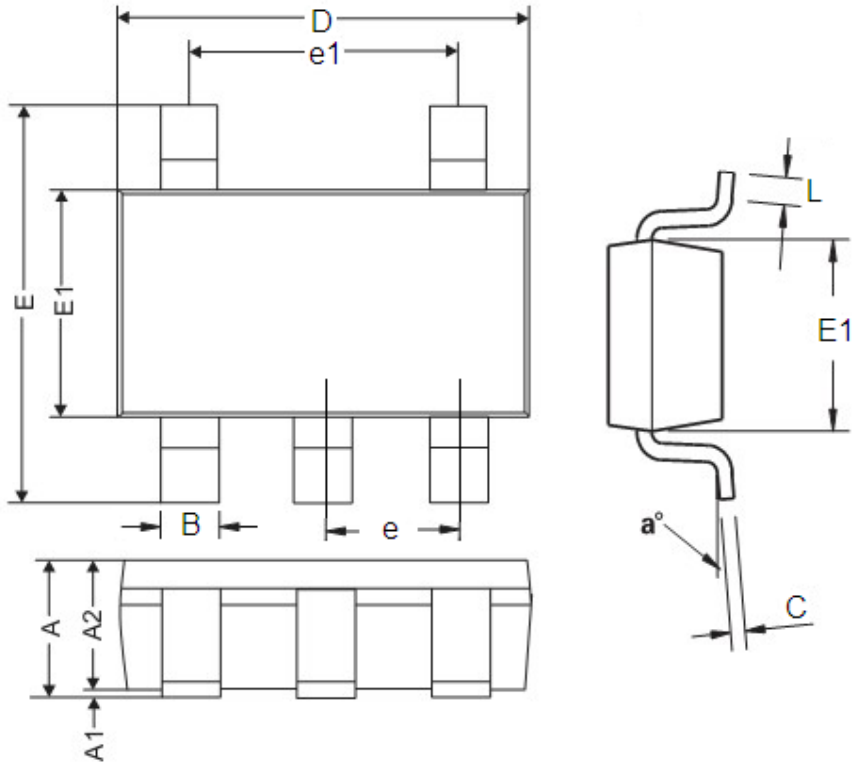


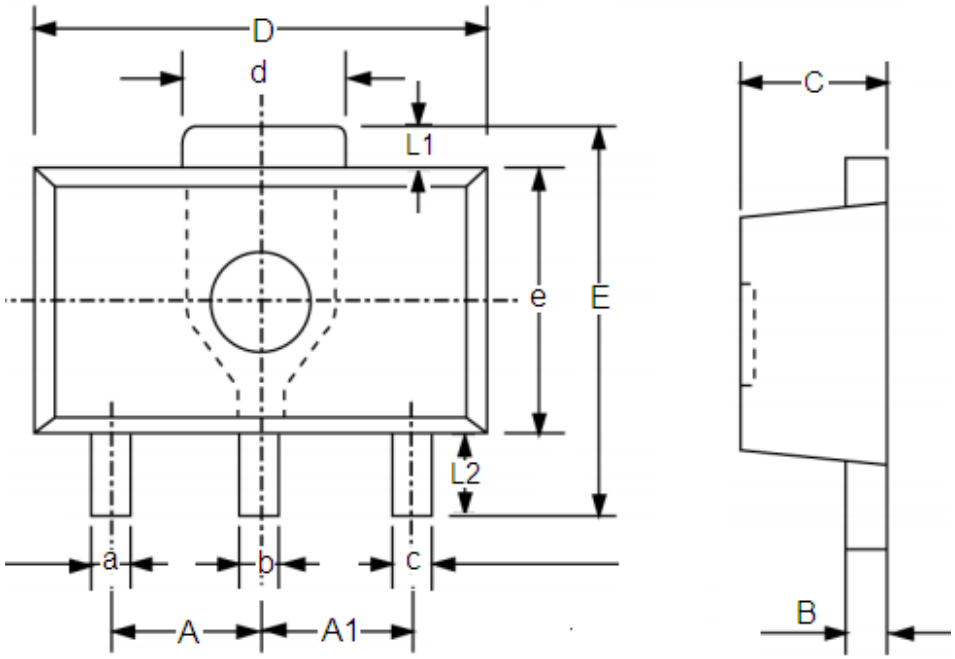
## Packaging Information

● SOT23-5 **Unit:mm**



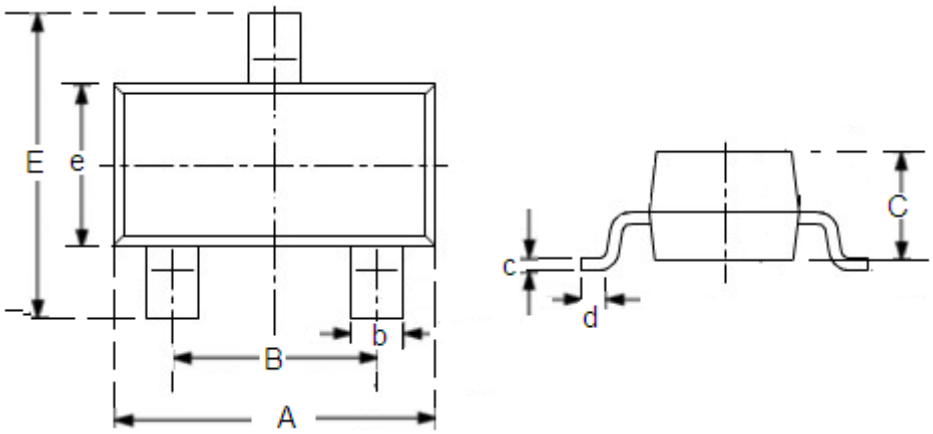

| DIM | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.9 | 1.45 | 0.0354 | 0.0570 |
| A1 | 0 | 0.15 | 0 | 0.0059 |
| A2 | 0.9 | 1.3 | 0.0354 | 0.0511 |
| B | 0.2 | 0.5 | 0.0078 | 0.0196 |
| C | 0.09 | 0.26 | 0.0035 | 0.0102 |
| D | 2.7 | 3.10 | 0.1062 | 0.1220 |
| E | 2.2 | 3.2 | 0.0866 | 0.1181 |
| E1 | 1.30 | 1.80 | 0.0511 | 0.0708 |
| e | 0.95REF | | 0.0374REF | |
| e1 | 1.90REF | | 0.0748REF | |
| L | 0.10 | 0.60 | 0.0039 | 0.0236 |
| $a^0$ | $0^0$ | $30^0$ | $0^0$ | $30^0$ |

● SOT89-3 **Unit:mm**



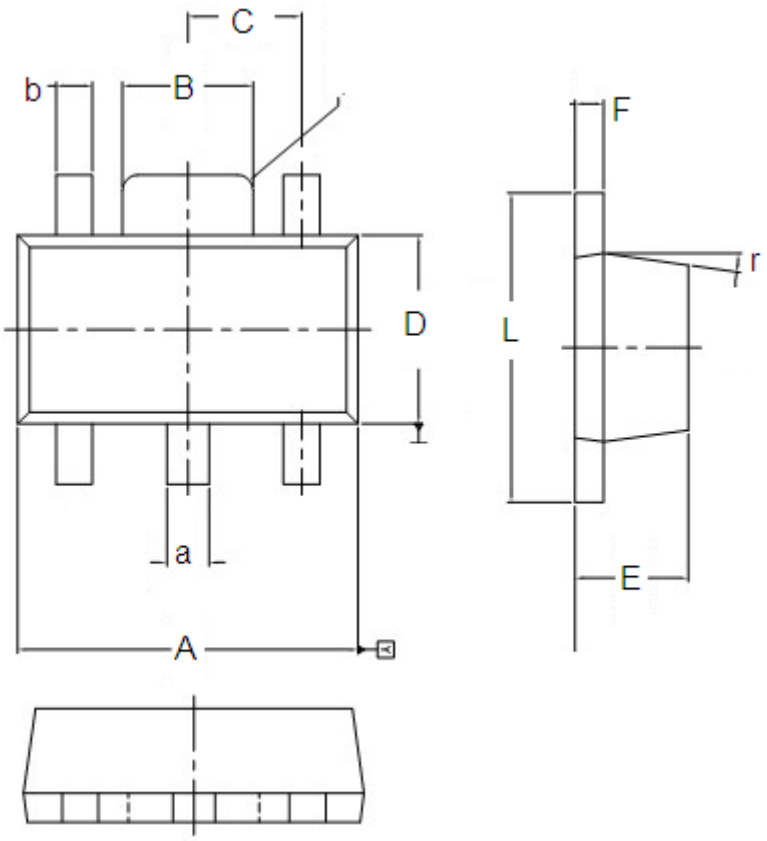

| DIM | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.4 | 1.6 | 0.0551 | 0.0630 |
| A1 | 1.4 | 1.6 | 0.0551 | 0.0630 |
| a | 0.36 | 0.48 | 0.0142 | 0.0189 |
| b | 0.41 | 0.53 | 0.0161 | 0.0209 |
| c | 0.36 | 0.48 | 0.0142 | 0.0189 |
| d | 1.4 | 1.75 | 0.0551 | 0.0689 |
| B | 0.38 | 0.43 | 0.015 | 0.0169 |
| C | 1.4 | 1.6 | 0.0551 | 0.0630 |
| D | 4.4 | 4.6 | 0.1732 | 0.181 |
| E | - | 4.25 | - | 0.1673 |
| e | 2.4 | 2.6 | 0.0945 | 0.1023 |
| L1 | 0.4 | - | 0.0157 | - |
| L2 | 0.8 | - | 0.0315 | - |

● SOT23-3 **Unit:mm**




| DIM | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 2.7 | 3.1 | 0.1063 | 0.122 |
| B | 1.7 | 2.1 | 0.0669 | 0.0827 |
| b | 0.35 | 0.5 | 0.0138 | 0.0197 |
| C | 1.0 | 1.2 | 0.0394 | 0.0472 |
| c | 0.1 | 0.25 | 0.0039 | 0.0098 |
| d | 0.2 | - | 0.0079 | - |
| E | 2.6 | 3.0 | 0.1023 | 0.1181 |
| e | 1.5 | 1.8 | 0.059 | 0.0708 |

● SOT89-5 **Unit:mm**




| DIM | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 4.4 | 4.6 | 0.173 | 0.181 |
| a | 0.5 | 0.62 | 0.02 | 0.024 |
| B | 1.63 | 1.83 | 0.064 | 0.072 |
| b | 0.44 | 0.54 | 0.017 | 0.021 |
| C | Type:1.5 | | Type:0.059 | |
| D | 2.4 | 2.6 | 0.094 | 0.102 |
| E | 1.4 | 1.6 | 0.054 | 0.063 |
| F | 0.35 | 0.43 | 0.013 | 0.017 |
| L | 3.95 | 4.25 | 0.155 | 0.167 |
| r | Type:$8^0$ | | Type:$8^0$ | |

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