

MA27 Series

Silicon epitaxial planer type variable resistor

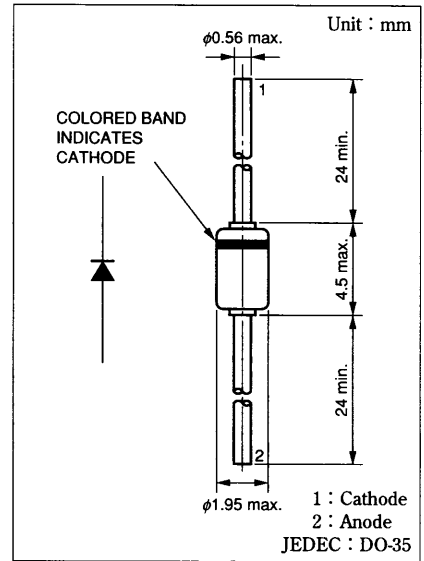
For temperature and reduced voltage compensation

■ Features

- High reliability achieved through combination of a planer type chip and glass sealing structure
- Easy mounting because of DO-35 (DHD) envelope used
- Extremely small reverse current I_R
- Large power dissipation
- Wide forward voltage V_F range

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Reverse voltage (DC)	V_R	6	V
Forward current (DC)	MA27-A/B	150	mA
	MA27W-A/B	100	
	MA27T-A/B	70	
	MA27Q-A/B	50	
Power dissipation	P_D	150	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



■ Electrical Characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit				
Reverse current (DC)	I_R	$V_R=6\text{V}$			10	μA				
					1					
		Forward voltage (DC)			V_{F1}		$I_F=1.5\text{mA}$	0.56	0.61	V
								0.59	0.64	
0.77										
$I_F=10\mu\text{A}$	1.15									
	1.60									
Forward voltage (DC)	V_{F2}	$I_F=50\text{mA}$	1.1	V						
			1.18		1.28					
			1.26		1.36					
			1.76		1.92					
			1.88		2.04					
			2.20		2.40					
			2.34		2.54					
Temperature coef- ficient of forward voltage	$-\Delta V_F/\Delta T$	$I_F=1.5\text{mA}$	2.0	mV/ $^\circ\text{C}$						
			4.6							
		$I_F=3\text{mA}$	6.5							
			8.8							

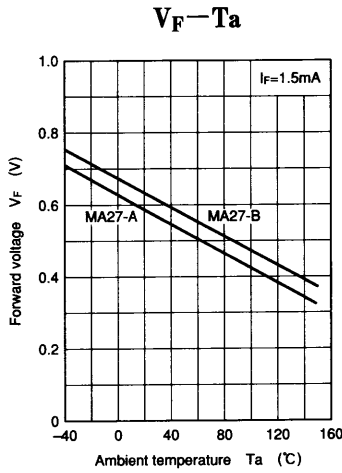
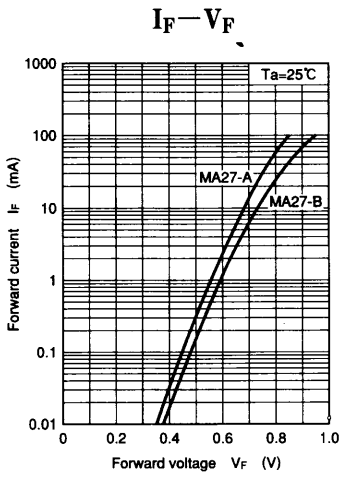
©Rated input/output frequency : 100MHz

■ Cathode Indication

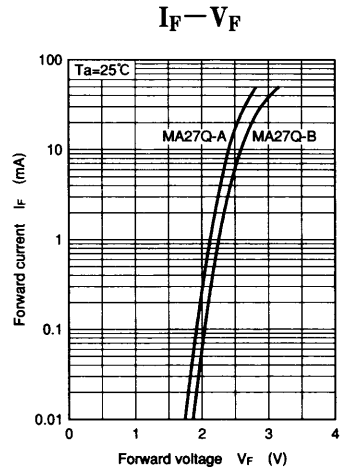
Type No.	MA27-A	MA27-B	MA27W-A	MA27W-B	MA27T-A*	MA27T-B*	MA27Q-A*	MA27Q-B*
Color	Yellow	Blue	Light Blue	Brown	Yellow	Blue	Green	Brown

* Body Color : Black

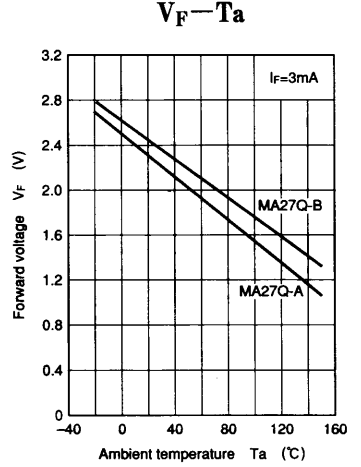
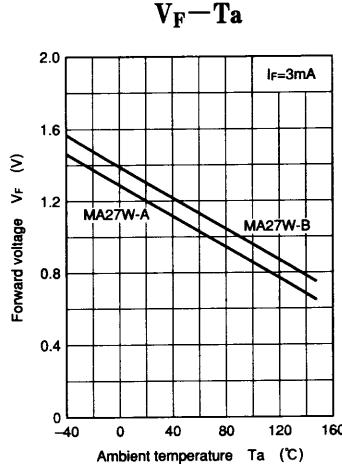
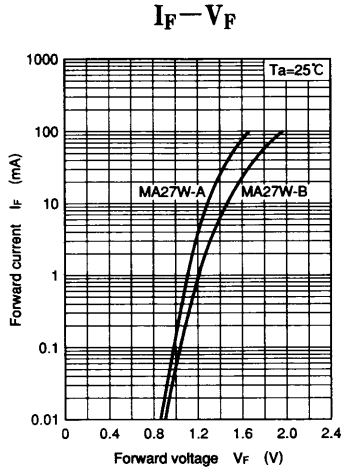
Common characteristics chart of MA27



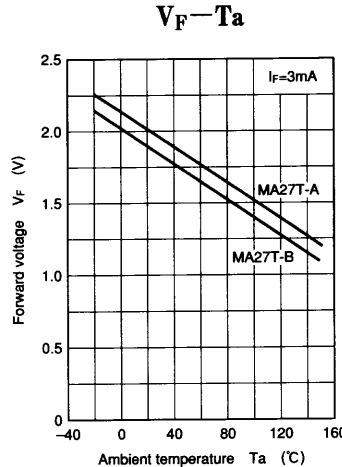
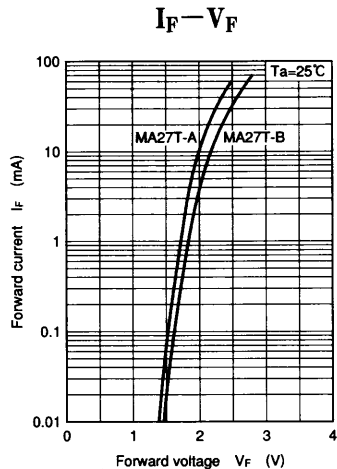
Characteristics chart of MA27Q



Characteristics chart of MA27W



Characteristics chart of MA27T



MA28 Series

Silicon epitaxial planer type variable resistor

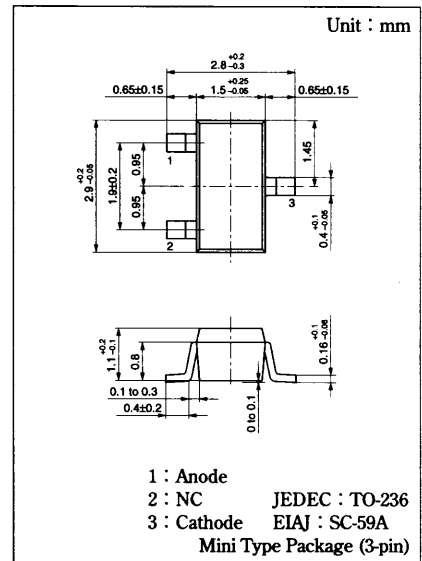
For temperature and reduced voltage compensation

■ Features

- Mini type package
- Extremely small reverse current I_R
- Planer structure with high reliability
- Wide forward voltage V_F range

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Reverse voltage (DC)	V_R	6	V
Forward current (DC)	MA28-A/B	150	mA
	MA28W-A/B	100	
	MA28T-A/B	70	
Power dissipation	P_D	150	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$



Varistors/
Rectifier
Diodes

■ Electrical Characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit
Reverse current (DC)	I_R	$V_R=6\text{V}$			1.0	μA
Forward voltage (DC)	MA28W-A/B MA27T-A	V_{F1} $I_F=10\mu\text{A}$	0.77			V
			1.15			
Forward voltage (DC)	MA28-A MA28-B MA28W-A MA28W-B MA28T-A MA28T-B	V_{F2} $I_F=1.5\text{mA}$ $I_F=3\text{mA}$	0.56		0.61	V
			0.59		0.64	
			1.18		1.28	
			1.26		1.36	
			1.76		1.92	
			1.88		2.04	
Temperature coefficient of forward voltage	MA28-A/B MA28W-A MA28T-A	$-\Delta V_F/\Delta T$ $I_F=3\text{mA}$		2.0		mV/ $^\circ\text{C}$
				4.6		
				6.5		

©Rated input/output frequency : 100MHz

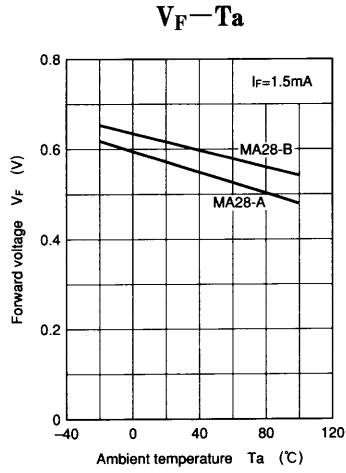
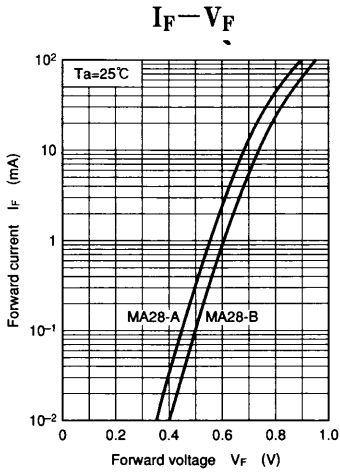
■ Marking

Type No.	MA28-A	MA28-B	MA28W-A	MA28W-B	MA28T-A	MA28T-B
Symbol	MD	ME	MF	MK	ML	MM

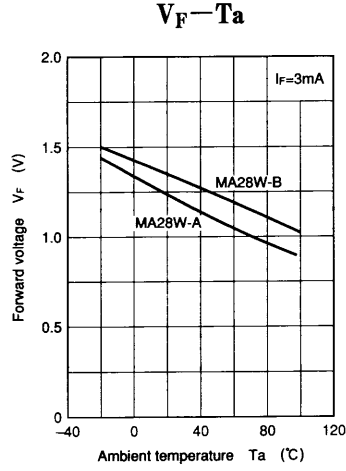
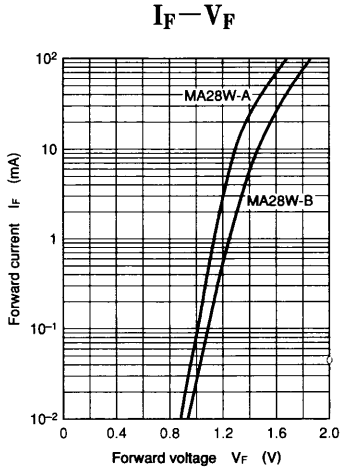
■ Marking (Example)



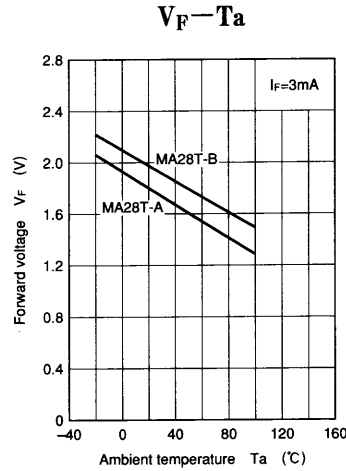
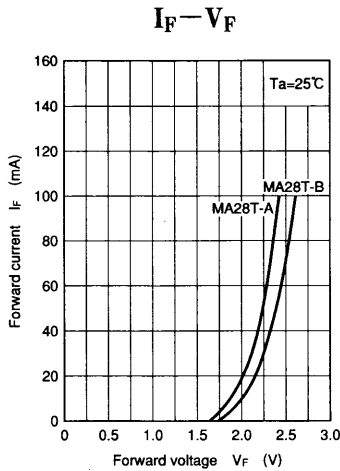
Common characteristics chart of MA28



Characteristics chart of MA28W



Characteristics chart of MA28T



MA29 Series

Silicon epitaxial planer type variable resistor

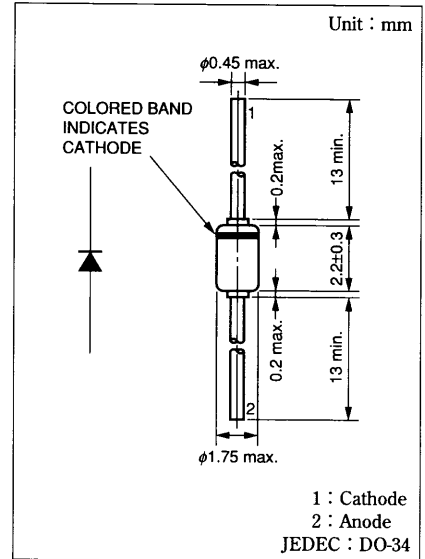
For temperature and reduced voltage compensation

■ Features

- High reliability achieved through combination of a planer type chip and glass sealing structure
- Easy mounting because of DO-34 (DHD) envelope used
- Extremely small reverse current I_R
- Large power dissipation
- Wide forward voltage V_F range

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Reverse voltage (DC)	V_R	6	V
Forward current (DC)	MA29-A/B	150	mA
	MA29W-A/B	100	
	MA29T-A/B	70	
	MA29Q-A/B	50	
Power dissipation	P_{tot}	150	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



■ Electrical Characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit	
Reverse current (DC)	I_R	$V_R=6\text{V}$			10	μA	
		$V_R=6\text{V}$			1		
Forward voltage (DC)	V_{F1}	$I_F=1.5\text{mA}$	MA29-A	0.56	0.61	V	
			MA29-B	0.59	0.64		
		$I_F=10\mu\text{A}$	MA29W-A/B	0.77			
			MA29T-A/B	1.15			
			MH29Q-A/B	1.60			
Forward voltage (DC)	V_{F2}	$I_F=3\text{mA}$	MA29-A/B		1.1	V	
			MH29W-A	1.18	1.28		
			MA29W-B	1.26	1.36		
			MA29T-A	1.76	1.92		
			MA29T-B	1.88	2.04		
			MA29Q-A	2.20	2.40		
			MA29Q-B	2.34	2.54		
Temperature coefficient of forward voltage	$-\Delta V_F/\Delta T$	$I_F=1.5\text{mA} (T_j=25 \text{ to } +150^\circ\text{C})$		2.0	mV/ $^\circ\text{C}$		
				4.6			
		$I_F=3\text{mA} (T_j=25 \text{ to } +150^\circ\text{C})$		6.5			
				8.8			

©Rated input/output frequency : 100MHz

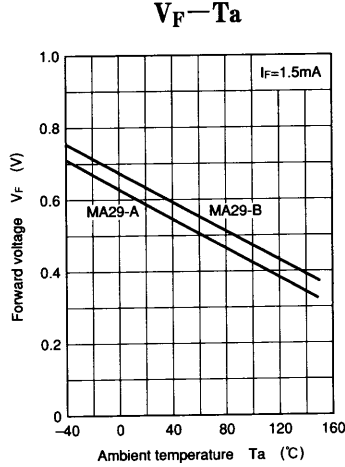
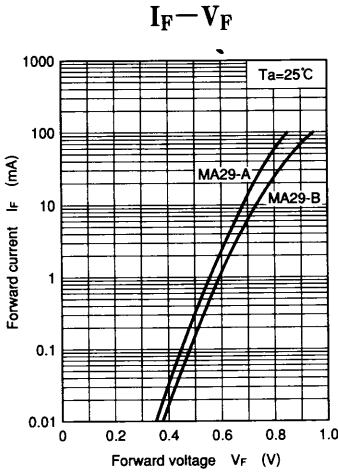
■ Cathode Indication

Type No.	MA29-A	MA29-B	MA29W-A	MA29W-B	MA29T-A*	MA29T-B*	MA29Q-A*	MA29Q-B*
Color	Red	Blue	Light Blue	Brown	Yellow	Blue	Green	Brown

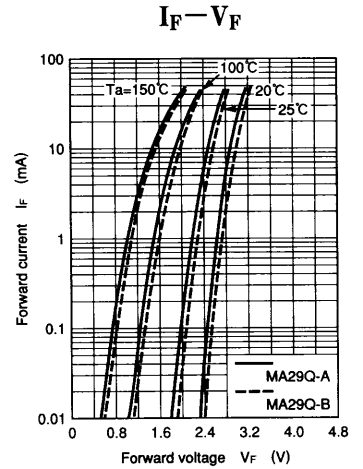
* Body Color : Black

Varistors/
Rectifier
Diodes

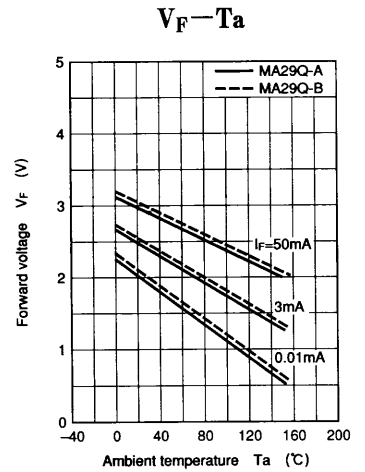
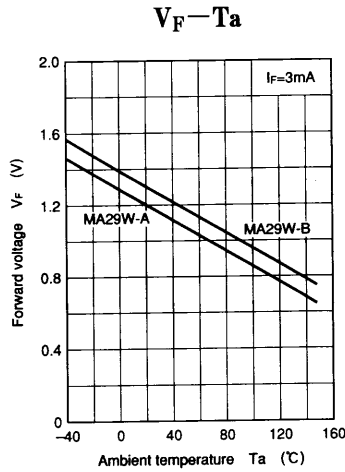
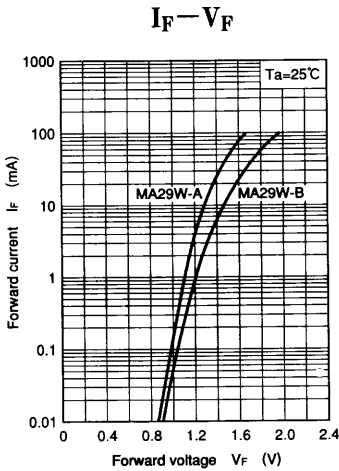
Common characteristics chart of MA29



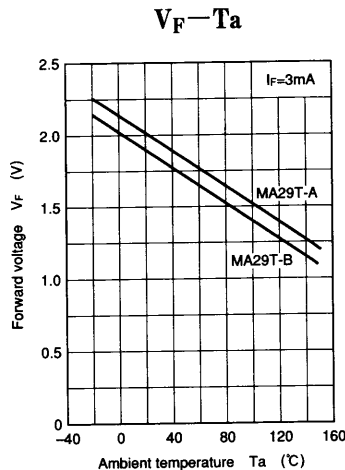
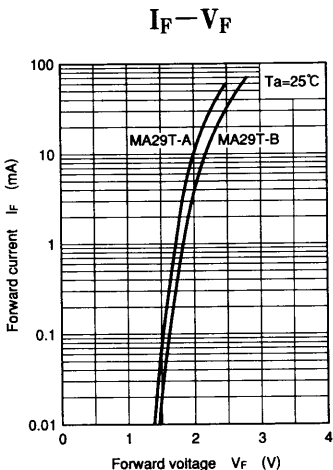
Characteristics chart of MA29Q



Characteristics chart of MA29W



Characteristics chart of MA29T



MA30 Series

Silicon epitaxial planer type variable resistor

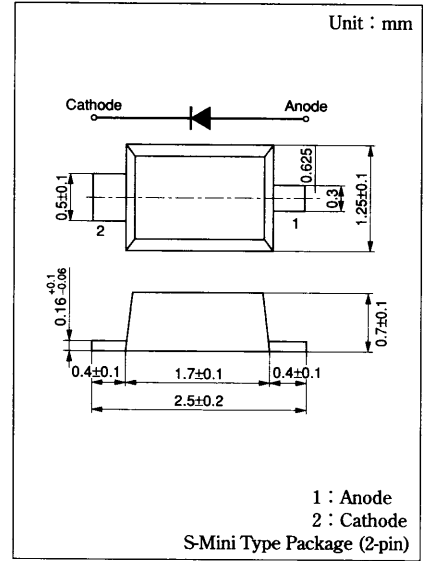
For reduced voltage and temperature compensations

■ Features

- S-Mini type package enabling high-density mounting
- Extremely small reverse current I_R
- Large power dissipation P_D
- Wide forward voltage V_F range

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Reverse voltage (DC)	V_R	6	V
Forward current (DC)	MA30-A/B	150	mA
	MA30W-A/B	100	
Power dissipation	P_D	100	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$



Varistors/
Rectifier
Diodes

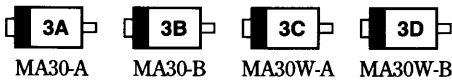
■ Electrical Characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit
Reverse current (DC)	I_R	$V_R=6\text{V}$			1	μA
Forward voltage (DC)	MA30-A	$I_F=1.5\text{mA}$	0.56		0.61	V
	MA30-B		0.59		0.64	
	MA30W-A/B	$I_F=10\mu\text{A}$	0.77			
Forward voltage (DC)	MA30W-A	$I_F=3\text{mA}$	1.18		1.28	V
	MA30W-B		1.26		1.36	
Temperature coefficient of forward voltage	MA30-A/B	$-\Delta V_F/\Delta T^*$		2		mV/ $^\circ\text{C}$
	MA30W-A/B			4.6		

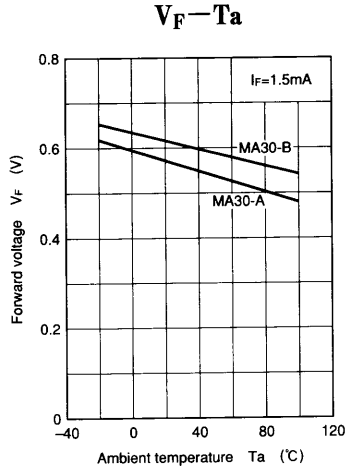
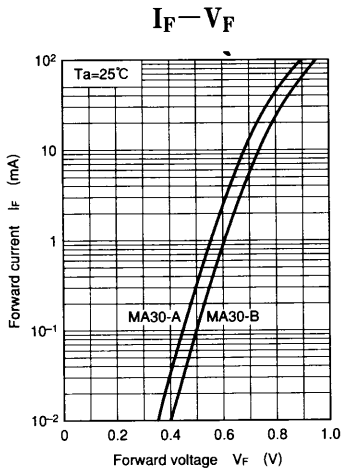
©Rated input/output frequency : 100MHz

* $T_j=25$ to 125°C

■ Marking



Common characteristics chart of MA30



Characteristics chart of MA30W

