

/ Descriptions

Voltage Regulator in a TO-252 Plastic Package.

/ Features

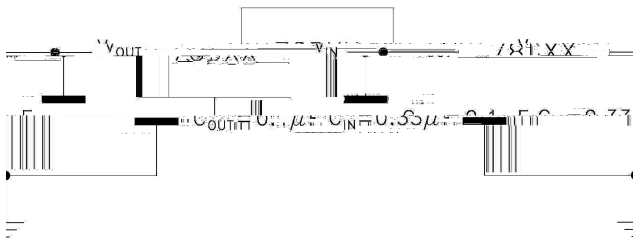
AEC-Q100

3-Terminal regulators ,output current up to 1.5A, internal thermal overload protection and short-circuit limiting, Qualified to AEC-Q100 Standards for High Reliability, HF Product.

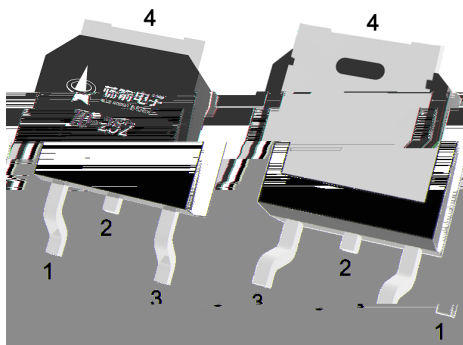
/ Applications

Voltage Regulator, Meet the stringent requirements of automotive applications.

I	I	Equivalent Circuit or Application Circuit



/ Pinning



PIN1 IN PIN 2 4 GND PIN 3 OUT

/ Marking

See Marking Instructions.

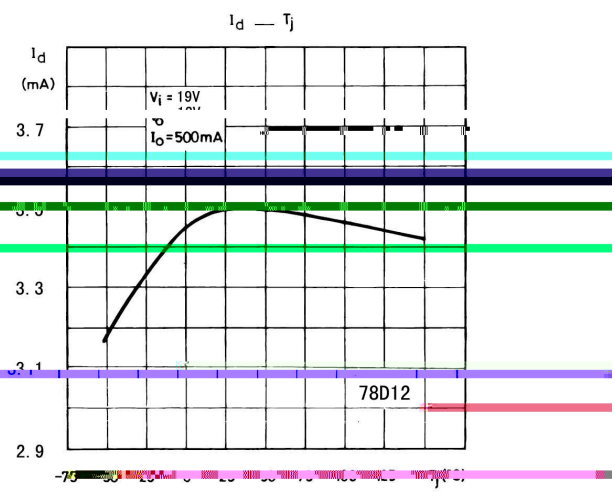
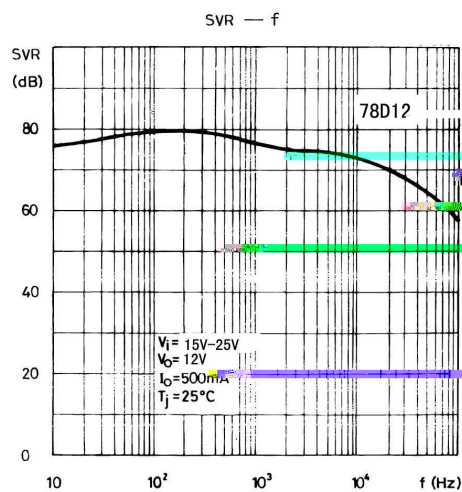
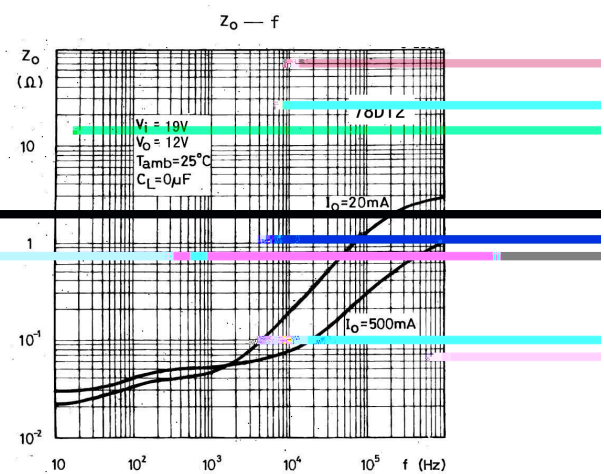
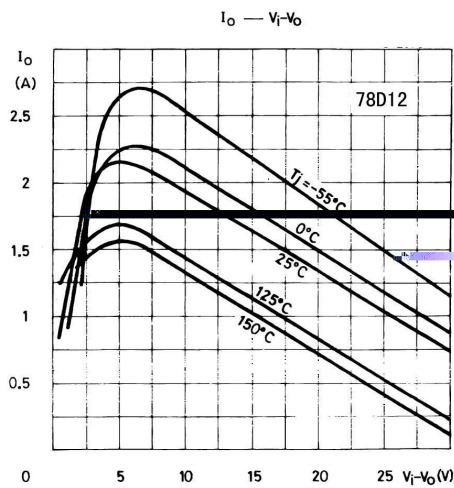
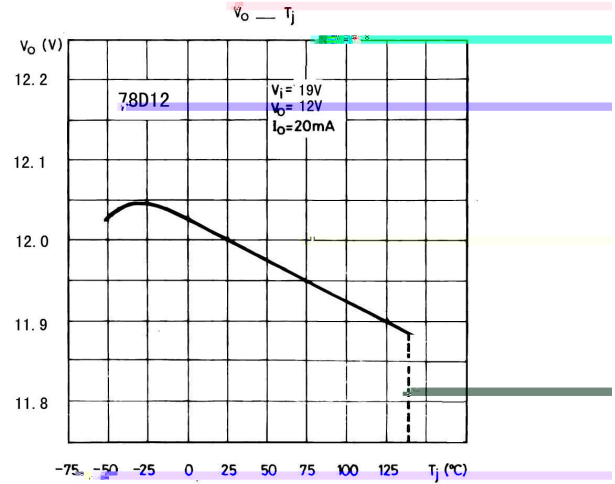
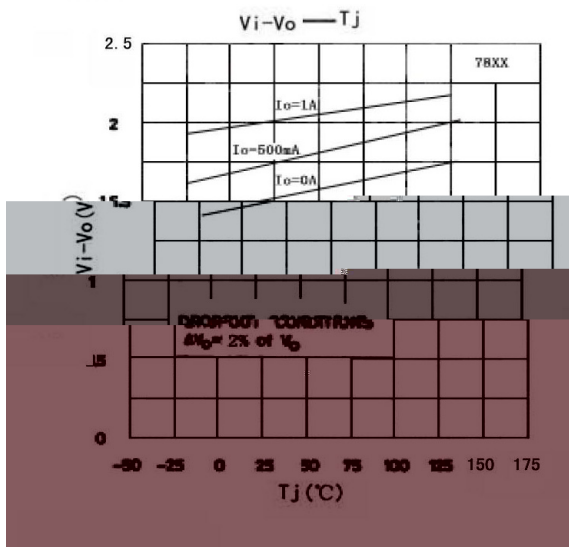
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Input voltage	V_i	35	V
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	105	$^{\circ}\text{C}/\text{W}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	10	$^{\circ}\text{C}/\text{W}$
Operating Temperature Range	T_{OPR}	-40~125	$^{\circ}\text{C}$
Storage temperature range	T_{stg}	-65~150	$^{\circ}\text{C}$

/ Electrical Characteristics(Ta=25 $V_i=19\text{V}$, $I_o=500\text{mA}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output voltage	V_o	$T_j=25$	11.5	12.0	12.5	V
		$V_i=14.5\text{V}-27\text{V}$ $I_o=5\text{mA}-1\text{A}$ $P_o \leq 15\text{W}$	11.4	12.0	12.6	V
Load Regulation	ΔV_o	$T_j=25^{\circ}\text{C}$ $I_o=5.0\text{mA}-1.5\text{A}$			240	mV
		$T_j=25^{\circ}\text{C}$ $I_o=250\text{mA}-750\text{mA}$			120	mV
Line regulation	ΔV_o	$T_j=25^{\circ}\text{C}$ $V_i=14.5\text{V}-30\text{V}$			240	mV
		$T_j=25^{\circ}\text{C}$ $V_i=16\text{V}-22\text{V}$			120	mV
Quiescent Current	I_q	$T_j=25^{\circ}\text{C}$			8.0	mA
Quiescent Current Change	ΔI_q	$V_i=14.5\text{V}-30\text{V}$			1.0	mA
		$I_o=5\text{mA}-1\text{A}$			0.5	mA
Output Voltage Drift	$\Delta V_o/\Delta T$	$I_o=5\text{mA}$		-1		mV/ $^{\circ}\text{C}$
Output Noise Voltage	eN	B=10Hz-100KHz $T_j=25^{\circ}\text{C}$		75		$\mu\text{V}/V_o$
Supply Voltage Rejection	SVR	$V_i=15\text{V}-25\text{V}$ $f=120\text{Hz}$	55			dB
Dropout Voltage	V_d	$I_o=1\text{A}$ $T_j=25^{\circ}\text{C}$		2.0		V
Output Resistance	R_o	$f=1\text{KHz}$		18		m Ω
Short Circuit Current	I_{sc}	$V_i=35\text{V}$ $T_j=25^{\circ}\text{C}$		0.35		A
Short Circuit Peak Current	I_{scp}	$T_j=25^{\circ}\text{C}$		2.2		A

/ Electrical Characteristic Curve

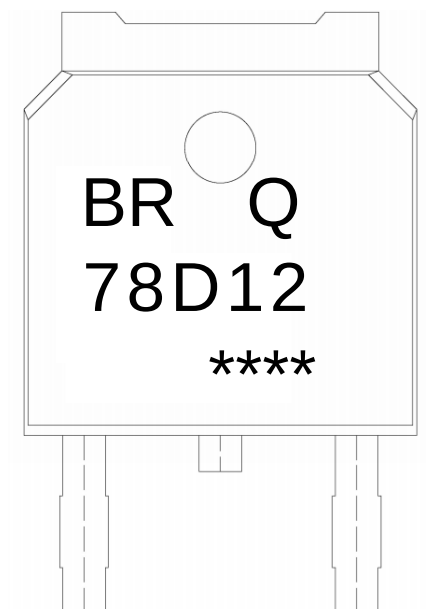


Technical drawing of a mechanical part, likely a shaft or armature, showing dimensions and a 45-degree angle. The drawing includes a side view and a cross-sectional view. Key dimensions and features are labeled:

- Dimensions:**
 - D : Total diameter of the shaft.
 - $D1$: Diameter of the central section.
 - A : Length of the central section.
 - C : Length of the section to the right of the central section.
 - B : Length of the section to the left of the central section.
 - $L3$: Length of the section to the right of the central section.
 - $e1$: Distance from the left end to the center of the shaft.
 - $e2$: Distance from the left end to the center of the shaft.
 - δ : Thickness of the flange.
 - $\delta1$: Thickness of the flange.
 - K : Distance from the center of the shaft to the center of the flange.
- Angle:** A 45-degree angle is indicated on the left side of the shaft.
- Sectional View:** A cross-sectional view of the shaft is shown on the right, with a 45-degree angle indicated.

Symbol		Dimensions In Millimeters		Symbol		Dimensions In Millimeters	
		Min	Max.			Min	Max
	5.05	6.25	A		2.20	2.40	B
	2.24	2.34			0.95	1.25	
	1.42	1.73			0.70	0.90	
	9.85	10.35			0.45	0.70	
	0.45	0.55			1.12	1.70	
	6.45	6.75			0.60	0.90	
	0.10	0.16			0.50	0.80	

/ Marking Instructions



BR

Q

78D12

Note:

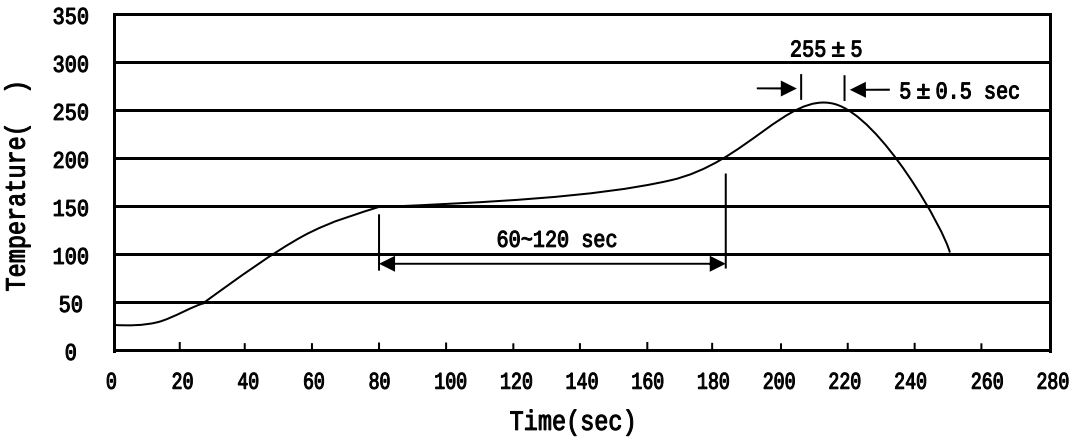
BR: Company Code

Q: Automobile halogen-free product Code

78D12: Product Type

****: Lot No. Code, code change with Lot No

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1

150 200

60 120sec;

1.Preheating:150~200 , Time:60~120sec.
- 2

255±5

5±0.5sec;

2.Peak Temp.:255±5 , Duration:5±0.5sec.
- 3

2 10 /sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	只 卷盘	卷盘 盒	只 盒	盒 箱	只 箱		盒	箱
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

/ TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	只 套管	套管 盒	只 盒	盒 箱	只 箱	套管	盒	箱
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices