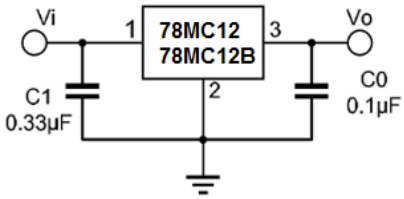
78MC12/78MC12B

Three-terminal Positive Voltage Regulator

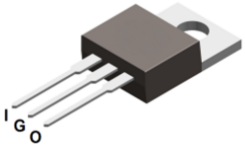
Features

- If adequate heat sinking is provided, they can deliver over 1.0A output current
- Thermal overload protection
- Short circuit protection
- Output transistor SOA protection

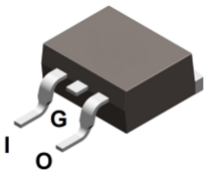


Mechanical Data

- Case: TO-220AB, TO-263
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-220AB



TO-263

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
78MC12	TO-220AB	50 pcs / Tube	78MC12
78MC12B	TO-263	50 pcs / Tube or 800 pcs / Tape & Reel	78MC12B

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	V_I	35	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	65	°C/W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	5	°C/W
Operating Temperature Range	T_{OPR}	-40 ~ +125	°C
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Electrical Characteristics (I_O = 500mA, V_I = 19V, C_I = 0.33μF, C_O = 0.1μF unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J = 25℃	11.5	12	12.5	V
		5mA < I_O < 1A, P_O < 15W 15.5V ≤ V_I ≤ 27V	11.4	12	12.6	V
Line Regulation	ΔV_O	14.5V ≤ V_I ≤ 30V, T_J = 25℃	-	-	240	mV
		16V ≤ V_I ≤ 22V, T_J = 25℃	-	-	120	mV
Load Regulation	ΔV_O	5mA ≤ I_O ≤ 1A, T_J = 25℃	-	-	240	mV
		0.25A ≤ I_O ≤ 0.75A, T_J = 25℃	-	-	120	mV
Quiescent Current	I_Q	T_J = 25℃	-	4.4	8	mA
Quiescent Current Change	ΔI_Q	5mA ≤ I_O ≤ 1A	-	-	0.5	mA
		15V ≤ V_I ≤ 30V, I_O = 0.5A	-	-	0.8	mA
Output Voltage Drift	ΔV_O /ΔT	I_O = 5mA, 0 ≤ T_J ≤ 125℃	-	1.5	-	mV/°C
Output Noise Voltage	V_N	10Hz ≤ f ≤ 100kHz, T_A = 25℃	-	42	-	μV/V_O
Ripple Rejection	RR	15V ≤ V_I ≤ 25V, f = 120Hz	-	60	-	dB
Dropout Voltage	V_D	I_O = 1A, T_J = 25℃	-	2	-	V
Output resistance	R_O	f = 1kHz	-	18	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A = 25℃	-	200	-	mA

TYPICAL CHARACTERISTICS (@ T_A = 25°C unless otherwise specified)

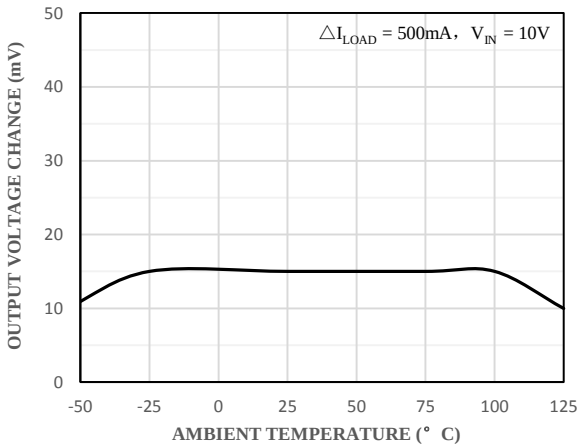


Fig 1 Load Regulation vs. Temperature

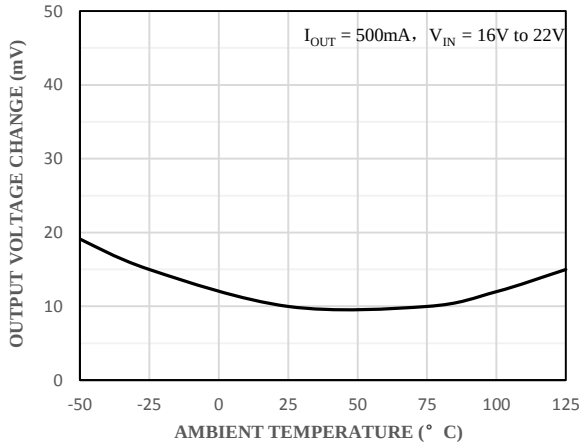


Fig 2 Line Regulation vs. Temperature

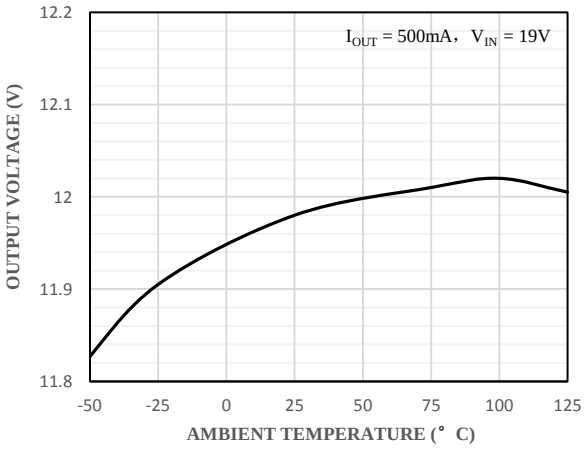


Fig 3 Output Voltage vs. Temperature

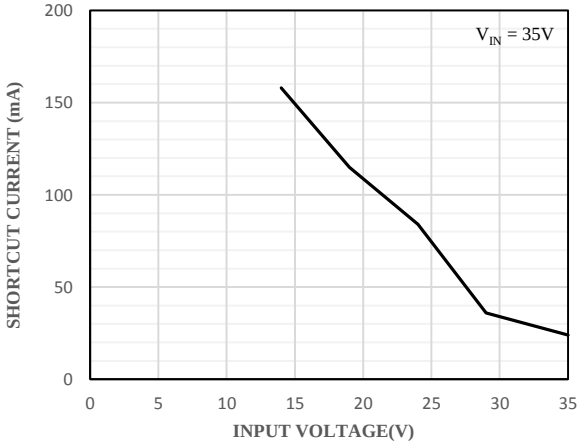


Fig 4 Shortcut Current vs. Input Voltage

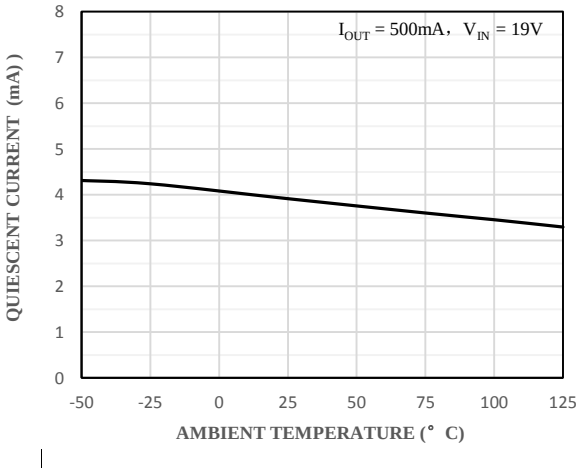


Fig 5 Quiescent Current vs. Temperature

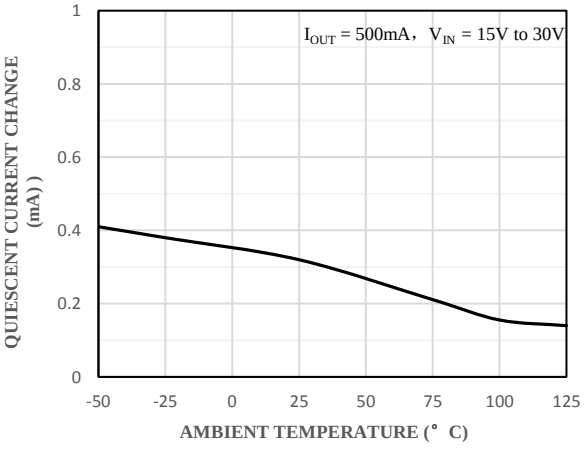


Fig 6 Quiescent Current Change vs. Temperature

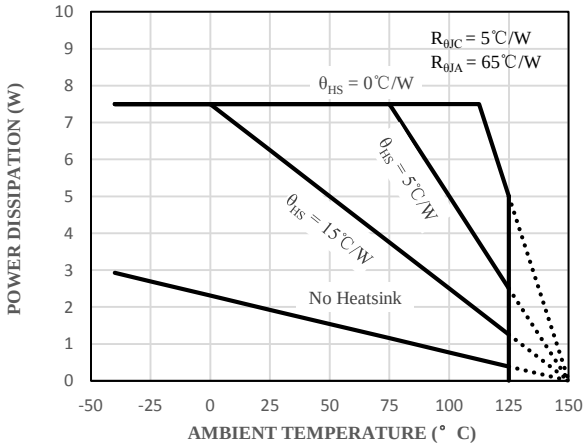


Fig 7 Power Dissipation vs. Temperature

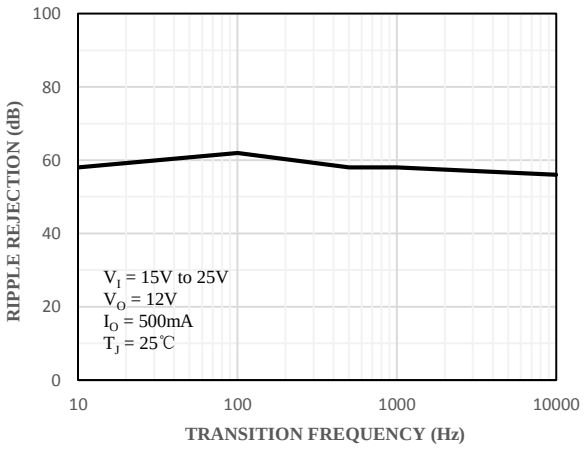
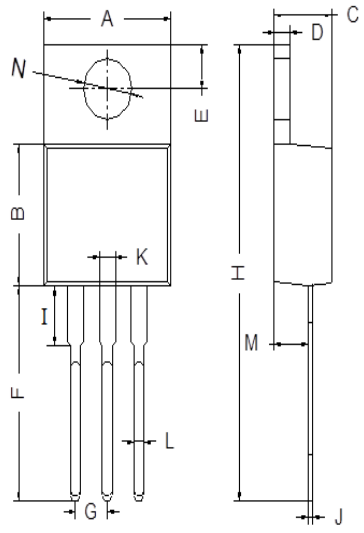


Fig 8 Ripple Rejection vs. Transition Frequency

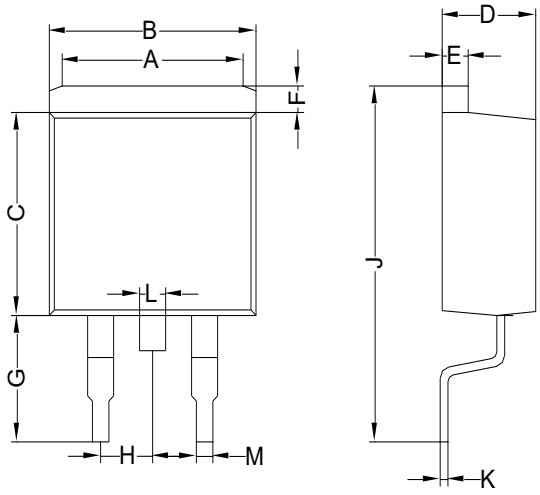
78MC12/78MC12B

Three-terminal Positive Voltage Regulator

Package Outline Dimensions (Unit: mm)



TO-220AB		
Dimension	**Min.**	**Max.**
A	9.80	10.30
B	8.70	9.10
C	4.37	4.77
D	1.07	1.47
E	2.64	2.84
F	13.14	13.74
G	2.44	2.64
H	28.03	28.83
I	3.50	4.00
J	0.28	0.48
K	1.22	1.32
L	0.71	0.91
M	2.40	2.60
N	3.76	3.96



TO-263		
Dimension	**Min.**	**Max.**
A	6.00	8.00
B	9.90	10.30
C	8.50	9.10
D	4.37	4.77
E	1.07	1.47
F	1.07	1.47
G	5.34	5.74
H	2.44	2.64
J	15.30	15.90
K	0.28	0.48
L	1.17	1.37
M	0.71	0.91

Mounting Pad Layout (Unit: mm)

TO-263