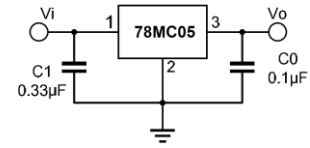




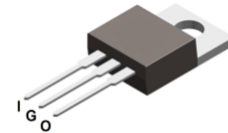
### Features

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



TO-220AB

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
78MC05	TO-220AB	50 pcs / Tube	78MC05

### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	V <sub>I</sub>	35	V

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-to-Air	R <sub>θJA</sub>	65	°C/W
Thermal Resistance Junction-to-Case	R <sub>θJC</sub>	5	°C/W
Operating Temperature Range	T <sub>OPR</sub>	-40 ~ +125	°C
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 ~ +150	°C



### Electrical Characteristics ( $I_o = 500\text{mA}$ , $V_I = 10\text{V}$ , $C_I = 0.33\mu\text{F}$ , $C_O = 0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	$V_o$	$T_J = 25^\circ\text{C}$	4.8	5.0	5.2	V
		$5\text{mA} < I_o < 1\text{A}$ , $P_o < 15\text{W}$ $8\text{V} \leq V_I \leq 20\text{V}$	4.75	5.00	5.25	V
Line Regulation	$\Delta V_o$	$7.5\text{V} \leq V_I \leq 20\text{V}$ , $T_J = 25^\circ\text{C}$	-	4	20	mV
		$8\text{V} \leq V_I \leq 12\text{V}$ , $T_J = 25^\circ\text{C}$	-	2	10	mV
Load Regulation	$\Delta V_o$	$5\text{mA} \leq I_o \leq 1\text{A}$ , $T_J = 25^\circ\text{C}$	-	9	25	mV
		$0.25\text{A} \leq I_o \leq 0.75\text{A}$ , $T_J = 25^\circ\text{C}$	-	4	13	mV
Quiescent Current	$I_q$	$T_J = 25^\circ\text{C}$	-	4.2	8	mA
Quiescent Current Change	$\Delta I_q$	$5\text{mA} \leq I_o \leq 1\text{A}$	-	0.03	0.5	mA
		$8\text{V} \leq V_I \leq 25\text{V}$ , $I_o = 0.5\text{A}$	-	0.3	0.8	mA
Output Voltage Drift	$\Delta V_o / \Delta T$	$I_o = 5\text{mA}$ , $0 \leq T_J \leq 125^\circ\text{C}$	-	0.8	-	mV/ $^\circ\text{C}$
Output Noise Voltage	$V_N$	$10\text{Hz} \leq f \leq 100\text{kHz}$ , $T_A = 25^\circ\text{C}$	-	42	-	$\mu\text{V}/V_o$
Ripple Rejection	RR	$8\text{V} \leq V_I \leq 18\text{V}$ , $f = 120\text{Hz}$	62	73	-	dB
Dropout Voltage	$V_D$	$I_o = 1\text{A}$ , $T_J = 25^\circ\text{C}$	-	2	-	V
Output resistance	$R_o$	$f = 1\text{kHz}$	-	15	-	m $\Omega$
Short Circuit Current	$I_{sc}$	$V_I = 35\text{V}$ , $T_A = 25^\circ\text{C}$	-	200	-	mA



### TYPICAL CHARACTERISTICS (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

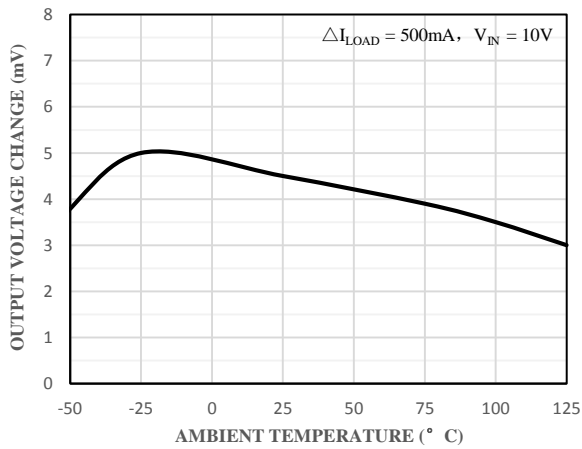


Fig 1 Load Regulation vs. Temperature

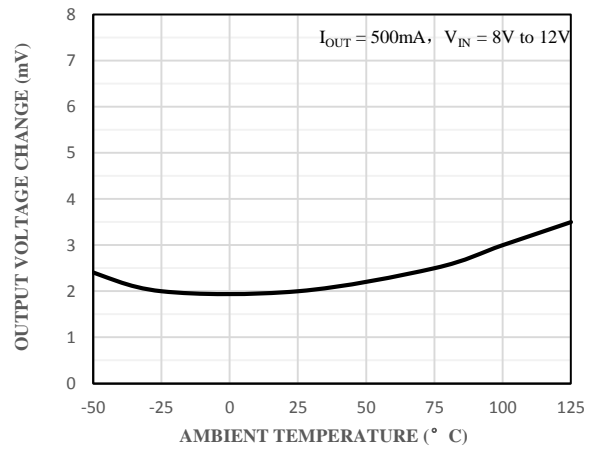


Fig 2 Line Regulation vs. Temperature

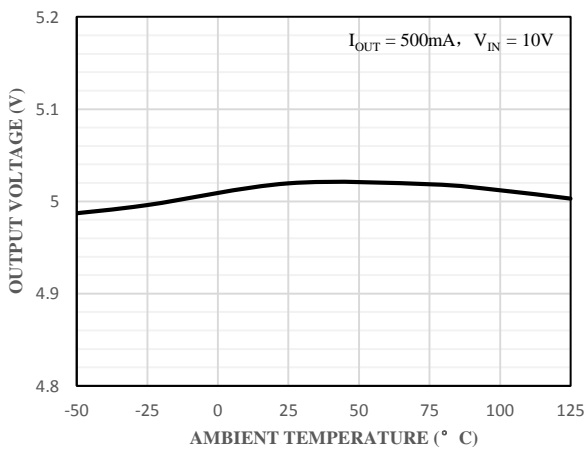


Fig 3 Output Voltage vs. Temperature

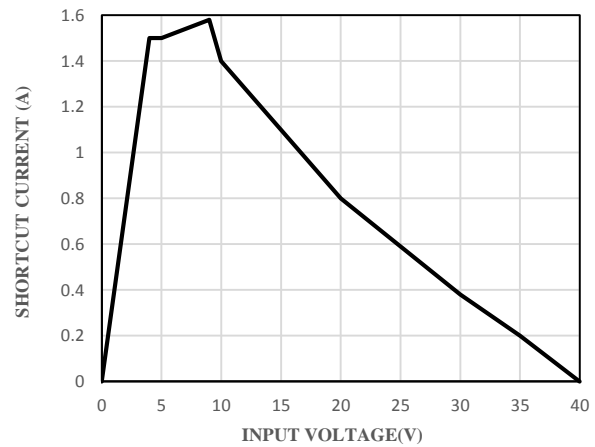


Fig 4 Shortcut Current vs. Input Voltage

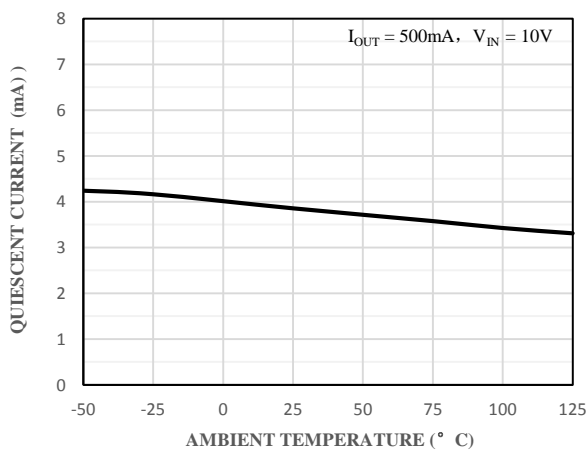


Fig 5 Quiescent Current vs. Temperature

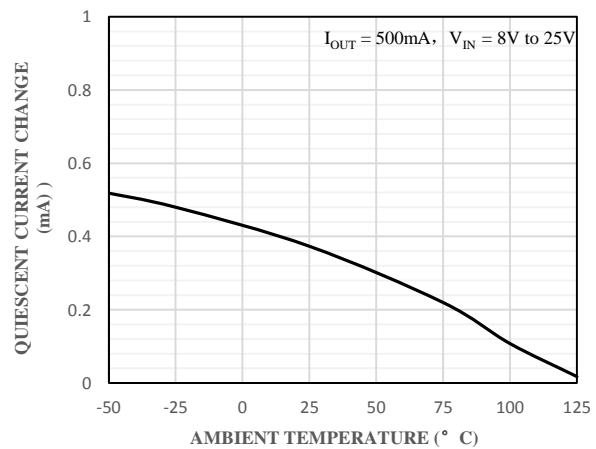
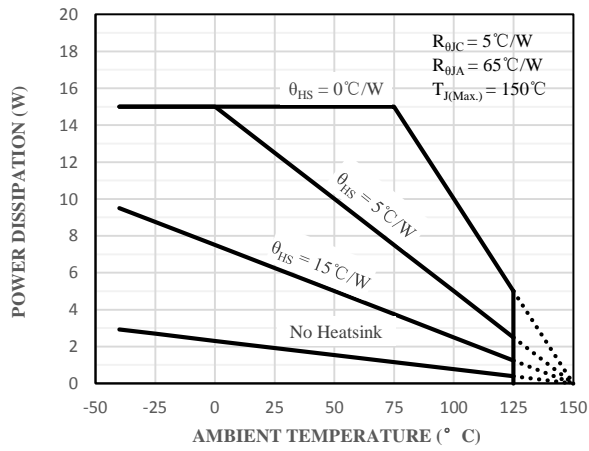
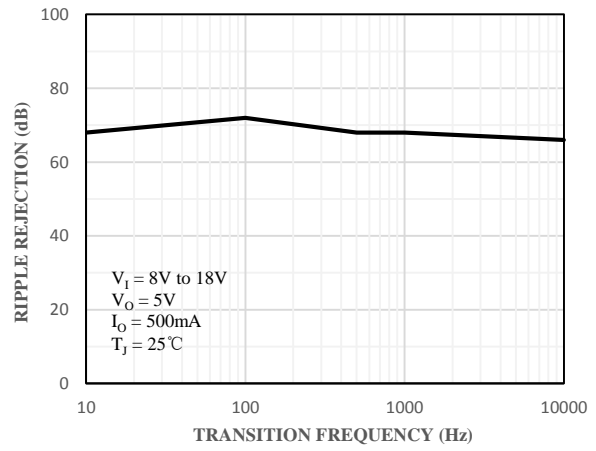


Fig 6 Quiescent Current Change vs. Temperature



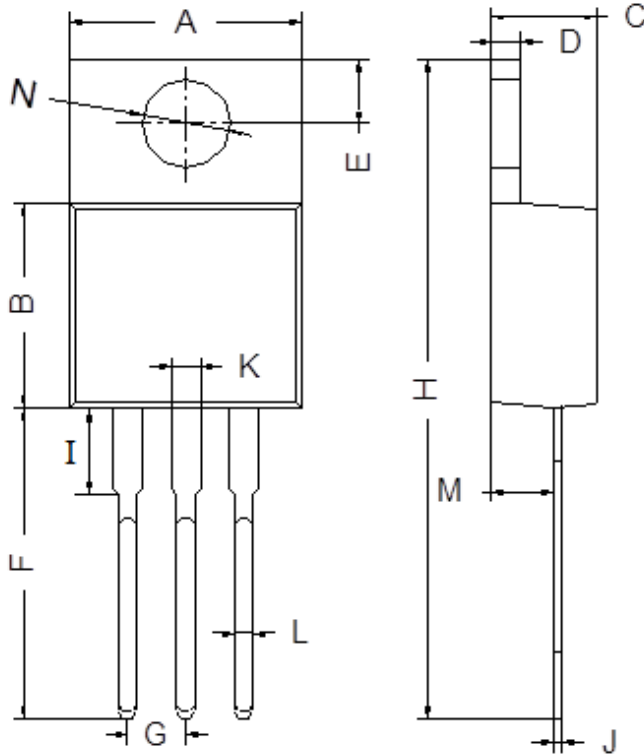
**Fig 7 Power Dissipation vs. Temperature**



**Fig 8 Ripple Rejection vs. Transition Frequency**



### 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