

RoHS Compliant Product
A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

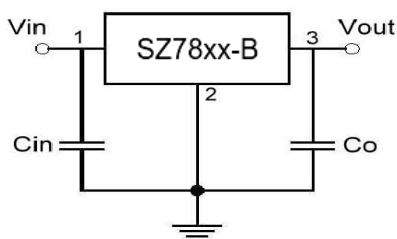
The SZ78XX-B series of fixed-voltage monolithic integrated-circuit voltage regulators designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1A of output current.

The internal current limiting and thermal shutdown features of the regulators make them essentially immune to overload.

FEATURES

- 5V, 8V, 9V, 12V Output Voltage Available
- Output Transistor Safe-Area Compensation
- No External Components
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limiting
- High Power Dissipation Capability

TYPICAL APPLICATION



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-263	0.8K	13 inch

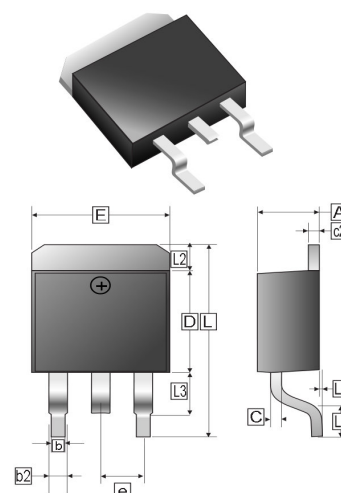
ORDER INFORMATION

Part Number	Type
SZ78xx-B	Lead (Pb)-free
SZ78xx-B-C	Lead (Pb)-free and Halogen-free

MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

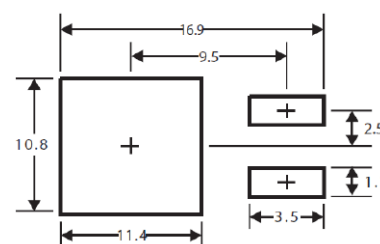
Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	35	V
Output Current	I_O	1.5	A
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	66.7	°C/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	8.33	
Operating Junction Temperature Range	T_J	-40~125	°C
Storage Temperature Range	T_{STG}	-65~150	°C

TO-263



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.00	4.87	c2	1.07	1.65
b	0.51	1.01	b2	1.34	REF.
L4	0.00	0.30	D	8.0	9.65
C	0.30	0.74	e	2.54	REF.
L3	1.50	REF.	L	14.6	16.1
L1	2.5	REF.	L2	1.27	REF.
E	9.60	10.67			

Mounting Pad Layout



*Dimensions in millimeters

SZ7805-B ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $T_J=0-125\text{ }^\circ\text{C}$, $I_O=500\text{mA}$, $V_{IN}=10\text{V}$, $C_{IN}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
V_O	$V_{IN}=10\text{V}$, $I_O=500\text{mA}$, $T_J=25\text{ }^\circ\text{C}$	4.8	5	5.2	V
	$7\text{V} \leq V_{IN} \leq 20\text{V}$, $5\text{mA} \leq I_O \leq 1\text{A}$, $P_D \leq 15\text{W}$	4.75	5	5.25	
ΔV_O (Line Regulation)	$7\text{V} \leq V_{IN} \leq 25\text{V}$, $T_J=25\text{ }^\circ\text{C}$	-	4	100	mV
	$8\text{V} \leq V_{IN} \leq 12\text{V}$, $T_J=25\text{ }^\circ\text{C}$	-	1.6	50	
ΔV_O (Load Regulation)	$5\text{mA} \leq I_O \leq 1.5\text{A}$, $T_J=25\text{ }^\circ\text{C}$	-	9	100	mV
	$250\text{mA} \leq I_O \leq 750\text{mA}$, $T_J=25\text{ }^\circ\text{C}$	-	4	50	
I_Q	$V_{IN}=10\text{V}$, $I_O=500\text{mA}$, $T_J=25\text{ }^\circ\text{C}$	-	5	8	mA
ΔI_Q	$5\text{mA} \leq I_O \leq 1\text{A}$	-	0.03	0.5	mA
	$7\text{V} \leq V_{IN} \leq 25\text{V}$	-	0.3	1.3	
V_N	$10\text{Hz} \leq f \leq 100\text{kHz}$, $T_J=25\text{ }^\circ\text{C}$	-	42	-	μV
RR	$8\text{V} \leq V_{IN} \leq 18\text{V}$, $f=120\text{Hz}$	62	73	-	dB
V_D	$I_O=1\text{A}$, $T_J=25\text{ }^\circ\text{C}$	-	2	-	V
I_{SC}	$T_J=25\text{ }^\circ\text{C}$	-	230	-	mA
I_{PK}	$T_J=25\text{ }^\circ\text{C}$	-	2.2	-	A
$\Delta V_O/\Delta T_J$	$I_O=5\text{mA}$	-	-1.1	-	mV/ $^\circ\text{C}$

SZ7808-B ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $T_J=0-125\text{ }^\circ\text{C}$, $I_O=500\text{mA}$, $V_{IN}=14\text{V}$, $C_{IN}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
V_O	$V_{IN}=14\text{V}$, $I_O=500\text{mA}$, $T_J=25\text{ }^\circ\text{C}$	7.7	8	8.3	V
	$10.5\text{V} \leq V_{IN} \leq 23\text{V}$, $5\text{mA} \leq I_O \leq 1\text{A}$, $P_D \leq 15\text{W}$	7.6	8	8.4	
ΔV_O (Line Regulation)	$10.5\text{V} \leq V_{IN} \leq 25\text{V}$, $T_J=25\text{ }^\circ\text{C}$	-	6	160	mV
	$11\text{V} \leq V_{IN} \leq 17\text{V}$, $T_J=25\text{ }^\circ\text{C}$	-	2	80	
ΔV_O (Load Regulation)	$5\text{mA} \leq I_O \leq 1.5\text{A}$, $T_J=25\text{ }^\circ\text{C}$	-	12	160	mV
	$250\text{mA} \leq I_O \leq 750\text{mA}$, $T_J=25\text{ }^\circ\text{C}$	-	4	80	
I_Q	$V_{IN}=14\text{V}$, $I_O=500\text{mA}$, $T_J=25\text{ }^\circ\text{C}$	-	4.3	8	mA
ΔI_Q	$5\text{mA} \leq I_O \leq 1\text{A}$	-	-	0.5	mA
	$10.5\text{V} \leq V_{IN} \leq 25\text{V}$	-	-	1	
V_N	$10\text{Hz} \leq f \leq 100\text{kHz}$, $T_J=25\text{ }^\circ\text{C}$	-	52	-	μV
RR	$11.5\text{V} \leq V_{IN} \leq 21.5\text{V}$, $f=120\text{Hz}$, $T_J=25\text{ }^\circ\text{C}$	55	72	-	dB
V_D	$I_O=1\text{A}$, $T_J=25\text{ }^\circ\text{C}$	-	2	-	V
I_{SC}	$T_J=25\text{ }^\circ\text{C}$	-	450	-	mA
I_{PK}	$T_J=25\text{ }^\circ\text{C}$	-	2.2	-	A
$\Delta V_O/\Delta T_J$	$I_O=5\text{mA}$	-	-0.8	-	mV/ $^\circ\text{C}$

SZ7809-B ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $T_J=0-125\text{ }^\circ\text{C}$, $I_O=500\text{mA}$, $V_{IN}=16\text{V}$, $C_{IN}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

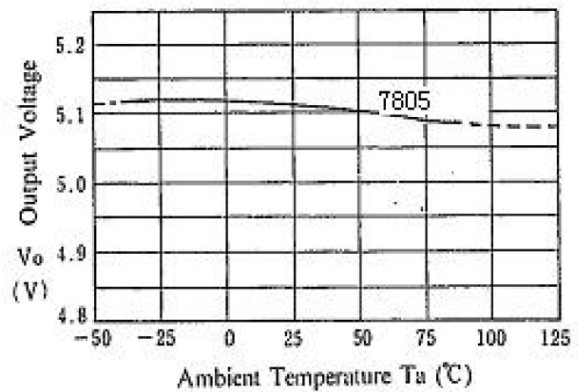
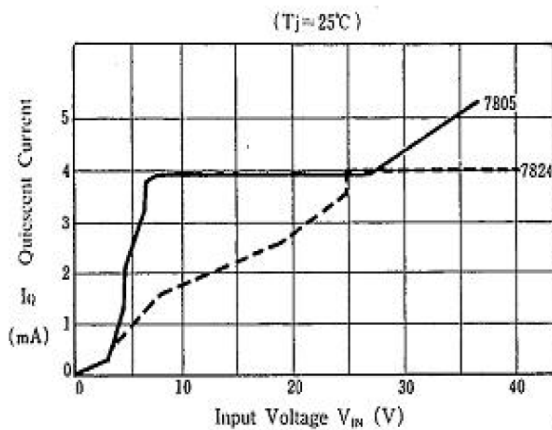
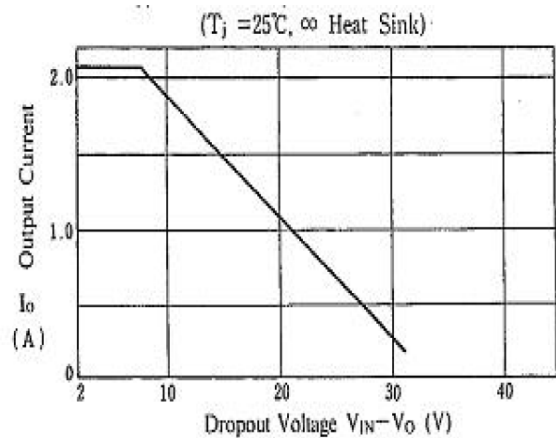
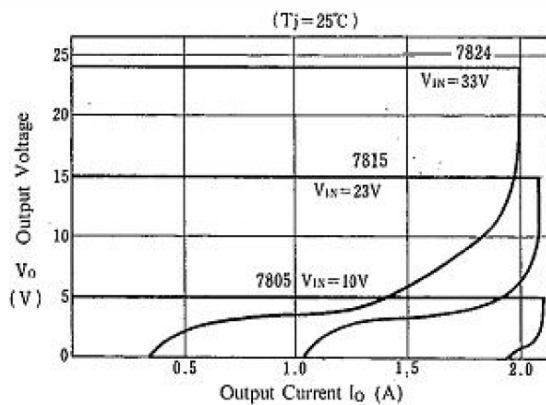
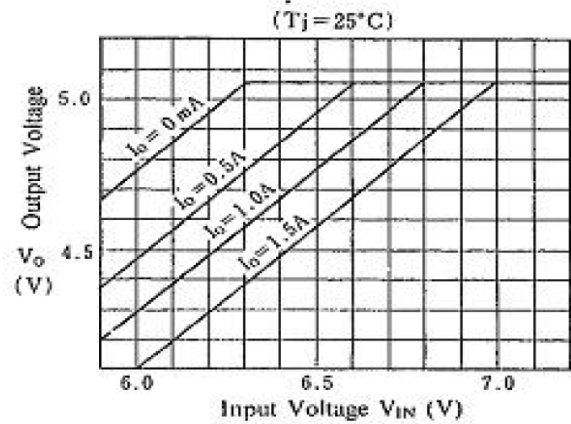
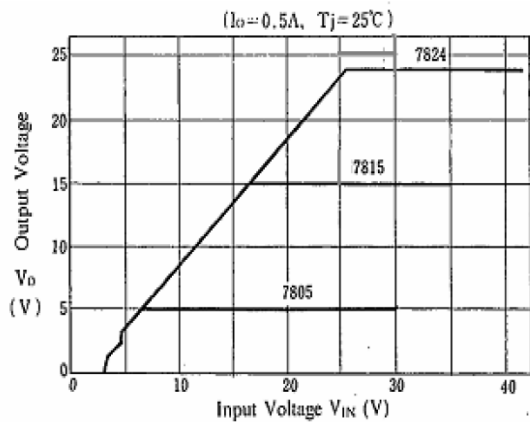
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
V_O	$V_{IN}=16\text{V}$, $I_O=500\text{mA}$, $T_J=25^\circ\text{C}$	8.65	9	9.35	V
	$11.5\text{V} \leq V_{IN} \leq 24\text{V}$, $5\text{mA} \leq I_O \leq 1\text{A}$, $P_D \leq 15\text{W}$	8.55	9	9.45	
ΔV_O (Line Regulation)	$11.5\text{V} \leq V_{IN} \leq 27\text{V}$, $T_J=25^\circ\text{C}$	-	7	180	mV
	$13\text{V} \leq V_{IN} \leq 19\text{V}$, $T_J=25^\circ\text{C}$	-	2	90	
ΔV_O (Load Regulation)	$5\text{mA} \leq I_O \leq 1.5\text{A}$, $T_J=25^\circ\text{C}$	-	12	180	mV
	$250\text{mA} \leq I_O \leq 750\text{mA}$, $T_J=25^\circ\text{C}$	-	4	90	
I_Q	$V_{IN}=15\text{V}$, $I_O=500\text{mA}$, $T_J=25^\circ\text{C}$	-	4.3	8	mA
ΔI_Q	$5\text{mA} \leq I_O \leq 1\text{A}$	-	-	0.5	mA
	$11.5\text{V} \leq V_{IN} \leq 27\text{V}$	-	-	1	
V_N	$10\text{Hz} \leq f \leq 100\text{kHz}$, $T_J=25^\circ\text{C}$	-	60	-	μV
RR	$12\text{V} \leq V_{IN} \leq 22\text{V}$, $f=120\text{Hz}$	55	70	-	dB
V_D	$I_O=1\text{A}$, $T_J=25^\circ\text{C}$	-	2	-	V
I_{SC}	$T_J=25^\circ\text{C}$	-	400	-	mA
I_{PK}	$T_J=25^\circ\text{C}$	-	2.2	-	mA
$\Delta V_O/\Delta T_J$	$I_O=5\text{mA}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$	-	-1	-	mV/ $^\circ\text{C}$

SZ7812-B ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $T_J=0-125\text{ }^\circ\text{C}$, $I_O=500\text{mA}$, $V_{IN}=19\text{V}$, $C_{IN}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
V_O	$V_{IN}=19\text{V}$, $I_O=500\text{mA}$, $T_J=25^\circ\text{C}$	11.5	12	12.5	V
	$14.5\text{V} \leq V_{IN} \leq 27\text{V}$, $5\text{mA} \leq I_O \leq 1\text{A}$, $P_D \leq 15\text{W}$	11.4	12	12.6	
ΔV_O (Line Regulation)	$14.5\text{V} \leq V_{IN} \leq 30\text{V}$, $T_J=25^\circ\text{C}$	-	10	240	mV
	$16\text{V} \leq V_{IN} \leq 22\text{V}$, $T_J=25^\circ\text{C}$	-	3	120	
ΔV_O (Load Regulation)	$5\text{mA} \leq I_O \leq 1.5\text{A}$, $T_J=25^\circ\text{C}$	-	-	240	mV
	$250\text{mA} \leq I_O \leq 750\text{mA}$, $T_J=25^\circ\text{C}$	-	-	120	
I_Q	$V_{IN}=19\text{V}$, $I_O=500\text{mA}$, $T_J=25^\circ\text{C}$	-	4.3	8	mA
ΔI_Q	$5\text{mA} \leq I_O \leq 1\text{A}$	-	-	0.5	mA
	$14.5\text{V} \leq V_{IN} \leq 30\text{V}$	-	-	1	
V_N	$10\text{Hz} \leq f \leq 100\text{kHz}$, $T_J=25^\circ\text{C}$	-	75	-	μV
RR	$15\text{V} \leq V_{IN} \leq 25\text{V}$, $f=120\text{Hz}$, $T_J=25^\circ\text{C}$	55	71	-	dB
V_D	$I_O=1\text{A}$, $T_J=25^\circ\text{C}$	-	2	-	V
I_{SC}	$T_J=25^\circ\text{C}$	-	350	-	mA
I_{PK}	$T_J=25^\circ\text{C}$	-	2.2	-	mA
$\Delta V_O/\Delta T_J$	$I_O=5\text{mA}$	-	-1	-	mV/ $^\circ\text{C}$

CHARACTERISTIC CURVE



PD-TA

