

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

DESCRIPTION

The SU78XX-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.

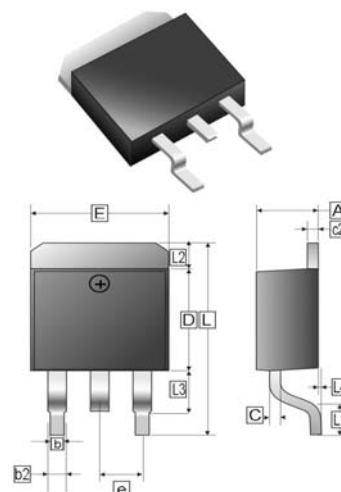
FEATURES

- 5V,6V,8V,9V,10V,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

PACKAGE INFORMATION

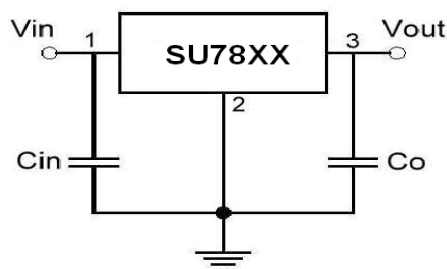
Package	MPQ	Leader Size
TO-263	0.8K	13 inch

TO-263-2L



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.17	1.45
b	0.76	1.00	b2	1.1	1.47
L4	0.00	0.30	D	8.5	9.0
c	0.36	0.5	e	2.54	REF
L3	1.50	REF	L	14.6	15.8
L1	2.29	2.79	theta	0°	8°
E	9.80	10.4	L2	1.27	REF

TYPICAL APPLICATION



MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	35	V
Output Current	I_O	1.5	A
Operating Junction And Storage Temperature Range	T_J, T_{STG}	-55~150	°C
Thermal Resistance Junction-Air	$R_{thetaJA}$	83.3	°C / W
Thermal Resistance Junction-Cases	$R_{thetaJC}$	8.33	°C / W

SU7805-B ELECTRICAL CHARACTERISTICS

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

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

SU7808-B ELECTRICAL CHARACTERISTICS

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

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

SU7809-B ELECTRICAL CHARACTERISTICS

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

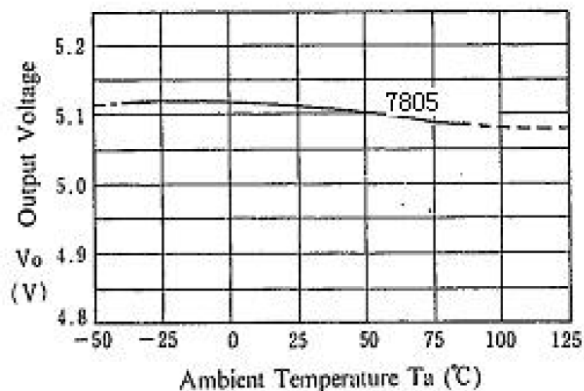
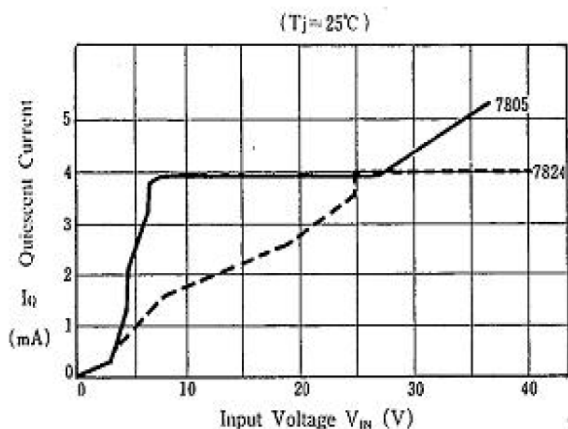
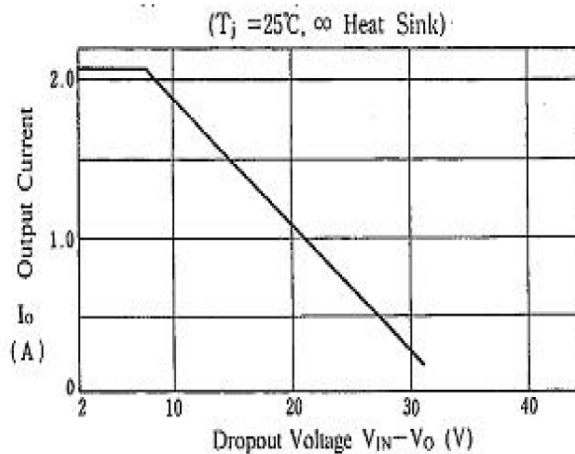
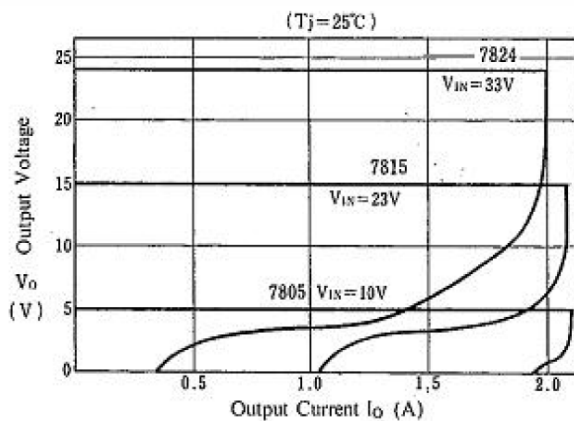
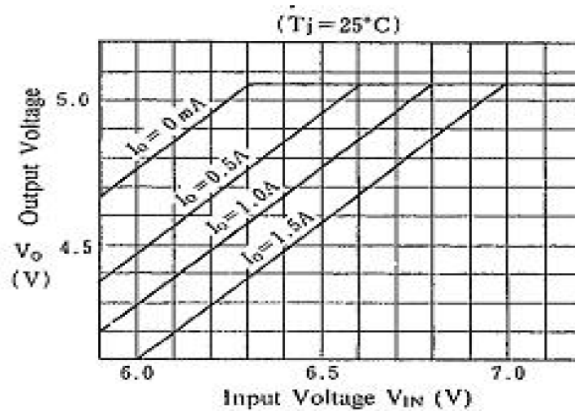
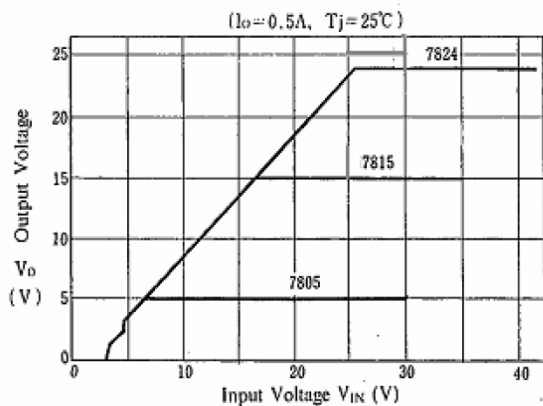
Symbol	Test Conditions	Min	Typ	Max	Unit
V_O	$V_{IN} = 16\text{V}$, $I_O = 500\text{mA}$, $T_J = 25^\circ\text{C}$	8.65	9	9.35	V
	$11.5\text{V} \leq V_{IN} \leq 24\text{V}$, $5\text{mA} \leq I_O \leq 1\text{A}$, $P_D \leq 15\text{W}$	8.55	9	9.45	
$\Delta V_O(\text{Line Regulation})$	$11.5\text{V} \leq V_{IN} \leq 27\text{V}$, $T_J = 25^\circ\text{C}$	-	7	180	mV
	$13\text{V} \leq V_{IN} \leq 19\text{V}$, $T_J = 25^\circ\text{C}$	-	2	90	
$\Delta V_O(\text{Load Regulation})$	$5\text{mA} \leq I_O \leq 1.5\text{A}$, $T_J = 25^\circ\text{C}$	-	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	-	$\text{mV}/^\circ\text{C}$

SU7812-B ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $T_J = 0 \sim 125^\circ\text{C}$, $I_O = 500\text{mA}$, $V_{IN} = 19\text{V}$, $C_{IN} = 0.33\mu\text{F}$, $C_O = 0.1\mu\text{F}$ 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	
$\Delta V_O(\text{Line Regulation})$	$14.5\text{V} \leq V_{IN} \leq 30\text{V}$, $T_J = 25^\circ\text{C}$	-	10	240	mV
	$16\text{V} \leq V_{IN} \leq 22\text{V}$, $T_J = 25^\circ\text{C}$	-	3	120	
$\Delta V_O(\text{Load Regulation})$	$5\text{mA} \leq I_O \leq 1.5\text{A}$, $T_J = 25^\circ\text{C}$	-	-	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	-	$\text{mV}/^\circ\text{C}$

CHARACTERISTIC CURVE



PD-TA

