

RoHS Compliant Product

A suffix of "-C" specifies halogen or lead -free

DESCRIPTION

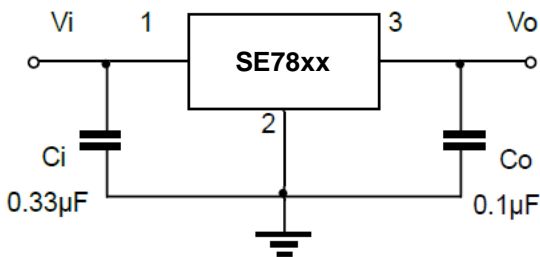
The SE78xx-B series of fixed-voltage monolithic Integrated circuit applications. These applications include on card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1 amperes of output current.

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

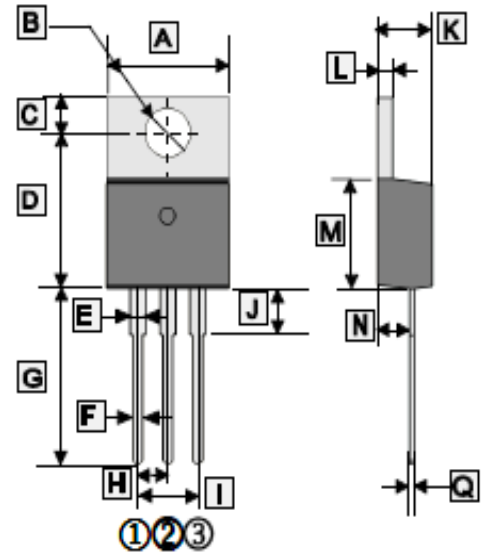
FEATURES

- Internal Short-Circuit Current Limiting
- 5V, 6V, 8V, 9V, 12V, 15V Output Voltage Available
- No External Components Required
- Wide Range Of Available, Fixed Output Voltage
- Internal Thermal Overload Protection

TYPICAL APPLICATION



TO-220J



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	9.57	10.57	I	4.68	5.48
B	3.54	4.14	J	2.95	3.96
C	2.54	2.94	K	4.27	4.87
D	11.86	13.26	L	1.07	1.47
E	0.97	1.57	M	8.0	10.0
F	0.51	1.11	N	2.03	2.92
G	12.7	13.8	Q	0.30	0.65
H	2.540 TYP.				

ORDER INFORMATION

Part Number	Type
SE78xx-B	Lead (Pb)-free
SE78xx-B-C	Lead (Pb)-free and Halogen-free

MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Input Voltage	V_{IN}	35	V
Output Current	I_o	1.5	A
Continuous Total Dissipation	P_d	1.5	W
Thermal Resistance, Junction-Ambient	$R_{\theta JA}$	66.7	$^{\circ}C/W$
Operating Junction Temperature Range	T_J	-40~125	$^{\circ}C$
Storage Temperature Range	T_{STG}	-65~150	

SE7805 ELECTRICAL CHARACTERISTICS

($V_I=10V$, $I_O=500mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, $T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Output Voltage	V_O	4.8	5	5.2	V	$7V \leq V_{IN} \leq 20V$, $5mA \leq I_O \leq 1A$, $T_J=0 \sim 125^\circ C$
		4.75	5	5.25		
Line Regulation	ΔV_O	-	4	100	mV	$7V \leq V_{IN} \leq 25V$
		-	1.6	50		$8V \leq V_{IN} \leq 12V$
Load Regulation	ΔV_O	-	9	100	mV	$5mA \leq I_O \leq 1.5A$
		-	4	50		$250mA \leq I_O \leq 750mA$
Quiescent Current	I_q	-	5	8	mA	
Quiescent Current Change	ΔI_q	-	0.3	1.3	mA	$7V \leq V_{IN} \leq 25V$, $T_J=0 \sim 125^\circ C$
		-	0.03	0.5		$5mA \leq I_O \leq 1A$, $T_J=0 \sim 125^\circ C$
Output Voltage Drift	$\Delta V_O/\Delta T$	-	-1.1	-	mV/ $^\circ C$	$I_O=5mA$, $T_J=0 \sim 125^\circ C$
Output Noise Voltage	V_N	-	42	-	$\mu V/V_O$	$10Hz \leq f \leq 100KHz$
Ripple Rejection	RR	62	73	-	dB	$8V \leq V_{IN} \leq 18V$, $f=120Hz$, $T_J=0 \sim 125^\circ C$
Dropout Voltage	V_D	-	2	-	V	$I_O=1A$
Output Resistance	R_O	-	10	-	m Ω	$f=1kHz$
Short Circuit Current	I_{SC}	-	230	-	mA	
Peak Current	I_{pk}	-	2.2	-	A	

Note:

1. Pulse test.

SE7806 ELECTRICAL CHARACTERISTICS

($V_I=11V$, $I_O=500mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, $T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Output Voltage	V_O	5.75	6	6.25	V	$8V \leq V_{IN} \leq 21V$, $5mA \leq I_O \leq 1A$, $T_J= -25 \sim 125^\circ C$
		5.7	6	6.3		
Line Regulation	ΔV_O	-	5	120	mV	$8V \leq V_{IN} \leq 25V$
		-	1.5	60		$9V \leq V_{IN} \leq 13V$
Load Regulation	ΔV_O	-	14	120	mV	$5mA \leq I_O \leq 1.5A$
		-	4	60		$250mA \leq I_O \leq 750mA$
Quiescent Current	I_q	-	4.3	8	mA	
Quiescent Current Change	ΔI_q	-	-	1.3	mA	$8V \leq V_{IN} \leq 25V$, $T_J= -25 \sim 125^\circ C$
		-	-	0.5		$5mA \leq I_O \leq 1A$, $T_J= -25 \sim 125^\circ C$
Output Voltage Drift	$\Delta V_O/\Delta T$	-	-0.8	-	mV/ $^\circ C$	$I_O=5mA$, $T_J=0 \sim 125^\circ C$
Output Noise Voltage	V_N	-	45	-	$\mu V/V_O$	$10Hz \leq f \leq 100KHz$
Ripple Rejection	RR	59	75	-	dB	$9V \leq V_{IN} \leq 19V$, $f=120Hz$, $T_J= -25 \sim 125^\circ C$
Dropout Voltage	V_D	-	2	-	V	$I_O=1A$
Output Resistance	R_O	-	10	-	m Ω	$f=1kHz$
Short Circuit Current	I_{SC}	-	550	-	mA	
Peak Current	I_{pk}	-	2.2	-	A	

Note:

1. Pulse test.

SE7808 ELECTRICAL CHARACTERISTICS

($V_I=14V$, $I_O=500mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, $T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Output Voltage	V_O	7.7	8	8.3	V	$10.5V \leq V_{IN} \leq 23V$, $5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
		7.6	8	8.4		
Line Regulation	ΔV_O	-	6	160	mV	$10.5V \leq V_{IN} \leq 25V$
		-	2	80		$11V \leq V_{IN} \leq 17V$
Load Regulation	ΔV_O	-	12	160	mV	$5mA \leq I_O \leq 1.5A$
		-	4	80		$250mA \leq I_O \leq 750mA$
Quiescent Current	I_Q	-	4.3	8	mA	
Quiescent Current Change	ΔI_Q	-	-	1	mA	$10.5V \leq V_{IN} \leq 25V$, $T_J = -25 \sim 125^\circ C$
		-	-	0.5		$5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
Output Voltage Drift	$\Delta V_O / \Delta T$	-	-0.8	-	mV/ $^\circ C$	$I_O = 5mA$, $T_J = -25 \sim 125^\circ C$
Output Noise Voltage	V_N	-	52	-	$\mu V / V_O$	$10Hz \leq f \leq 100KHz$
Ripple Rejection	RR	55	72	-	dB	$11.5V \leq V_{IN} \leq 21.5V$, $f = 120Hz$, $T_J = -25 \sim 125^\circ C$
Dropout Voltage	V_D	-	2	-	V	$I_O = 1A$
Output Resistance	R_O	-	10	-	m Ω	$f = 1kHz$
Short Circuit Current	I_{SC}	-	450	-	mA	
Peak Current	I_{pk}	-	2.2	-	A	

Note:

1. Pulse test.

SE7809 ELECTRICAL CHARACTERISTICS

($V_I=16V$, $I_O=500mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, $T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Output Voltage	V_O	8.65	9	9.35	V	$11.5V \leq V_{IN} \leq 24V$, $5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
		8.55	9	9.45		
Line Regulation	ΔV_O	-	7	180	mV	$11.5V \leq V_{IN} \leq 27V$
		-	2	90		$13V \leq V_{IN} \leq 19V$
Load Regulation	ΔV_O	-	12	180	mV	$5mA \leq I_O \leq 1.5A$
		-	4	90		$250mA \leq I_O \leq 750mA$
Quiescent Current	I_Q	-	4.3	8	mA	
Quiescent Current Change	ΔI_Q	-	-	1	mA	$11.5V \leq V_{IN} \leq 27V$, $T_J = -25 \sim 125^\circ C$
		-	-	0.5		$5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
Output Voltage Drift	$\Delta V_O / \Delta T$	-	-1	-	mV/ $^\circ C$	$I_O = 5mA$, $T_J = -25 \sim 125^\circ C$
Output Noise Voltage	V_N	-	60	-	$\mu V / V_O$	$10Hz \leq f \leq 100KHz$
Ripple Rejection	RR	55	70	-	dB	$12V \leq V_{IN} \leq 22V$, $f = 120Hz$, $T_J = -25 \sim 125^\circ C$
Dropout Voltage	V_D	-	2	-	V	$I_O = 1A$
Output Resistance	R_O	-	18	-	m Ω	$f = 1kHz$
Short Circuit Current	I_{SC}	-	400	-	mA	
Peak Current	I_{pk}	-	2.2	-	A	

Note:

1. Pulse test.

SE7812 ELECTRICAL CHARACTERISTICS

($V_I=19V$, $I_O=500mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, $T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Output Voltage	V_O	11.5	12	12.5	V	$14.5V \leq V_{IN} \leq 27V$, $5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
		11.4	12	12.6		
Line Regulation	ΔV_O	-	12	240	mV	$14.5V \leq V_{IN} \leq 30V$
		-	4	120		$16V \leq V_{IN} \leq 22V$
Load Regulation	ΔV_O	-	10	240	mV	$5mA \leq I_O \leq 1.5A$
		-	3	120		$250mA \leq I_O \leq 750mA$
Quiescent Current	I_Q	-	4.3	8	mA	
Quiescent Current Change	ΔI_Q	-	-	1	mA	$14.5V \leq V_{IN} \leq 30V$, $T_J = -25 \sim 125^\circ C$
		-	-	0.5		$5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
Output Voltage Drift	$\Delta V_O / \Delta T$	-	-1	-	mV/ $^\circ C$	$I_O = 5mA$, $T_J = -25 \sim 125^\circ C$
Output Noise Voltage	V_N	-	75	-	$\mu V / V_O$	$10Hz \leq f \leq 100KHz$
Ripple Rejection	RR	55	71	-	dB	$15V \leq V_{IN} \leq 25V$, $f = 120Hz$, $T_J = -25 \sim 125^\circ C$
Dropout Voltage	V_D	-	2	-	V	$I_O = 1A$
Output Resistance	R_O	-	18	-	m Ω	$f = 1kHz$, $T_J = -25 \sim 125^\circ C$
Short Circuit Current	I_{SC}	-	350	-	mA	
Peak Current	I_{PK}	-	2.2	-	A	

Note:

1. Pulse test.

SE7815 ELECTRICAL CHARACTERISTICS

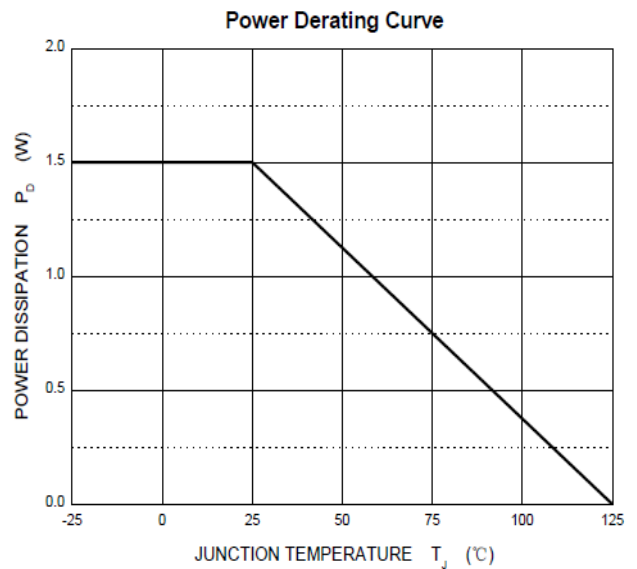
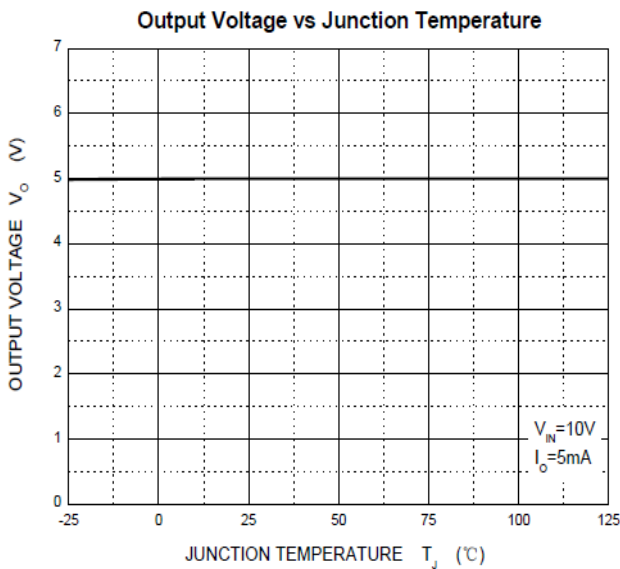
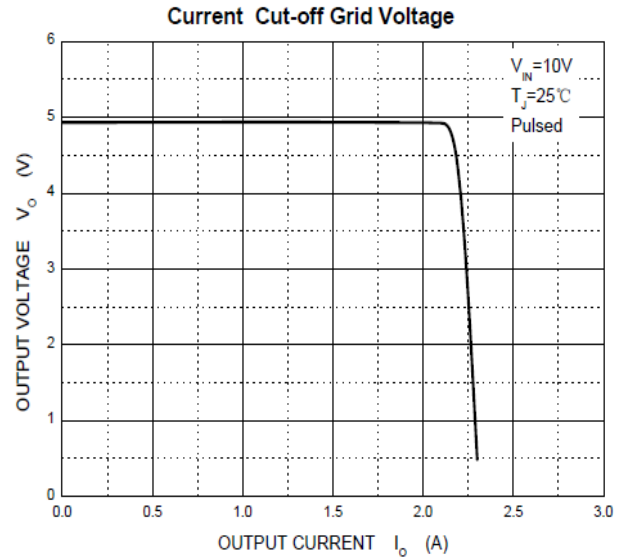
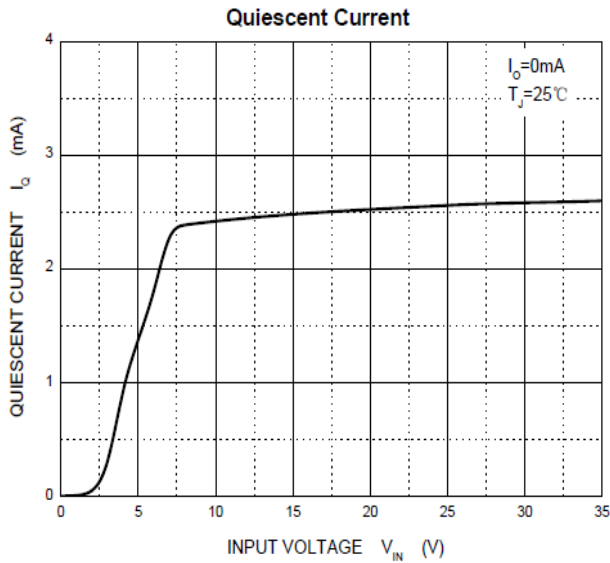
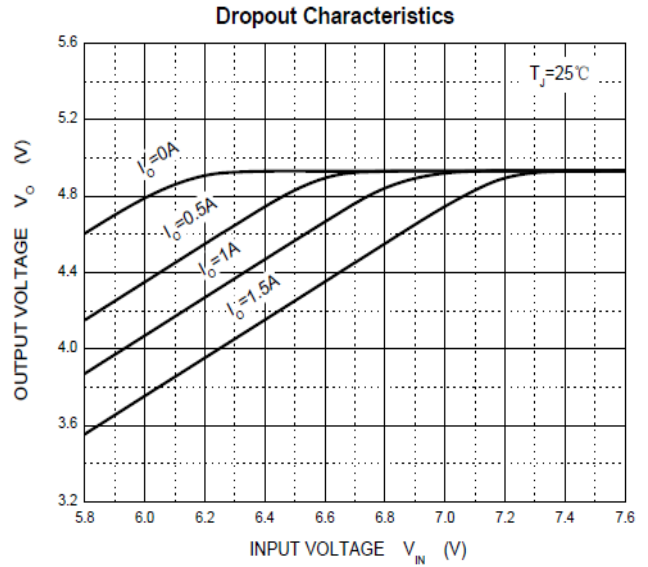
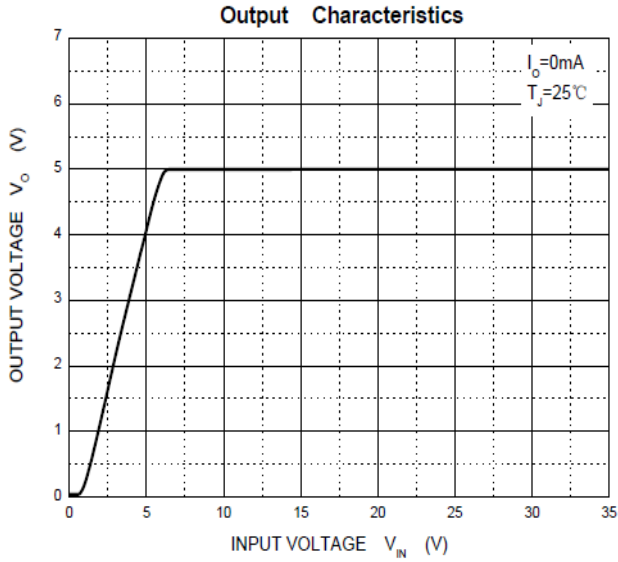
($V_I=23V$, $I_O=500mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, $T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Output Voltage	V_O	14.4	15	15.6	V	$17.5V \leq V_{IN} \leq 30V$, $5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
		14.25	15	15.75		
Line Regulation	ΔV_O	-	12	300	mV	$17.5V \leq V_{IN} \leq 30V$
		-	3	150		$20V \leq V_{IN} \leq 26V$
Load Regulation	ΔV_O	-	12	300	mV	$5mA \leq I_O \leq 1.5A$
		-	4	150		$250mA \leq I_O \leq 750mA$
Quiescent Current	I_Q	-	4.3	8	mA	
Quiescent Current Change	ΔI_Q	-	-	1	mA	$17.5V \leq V_{IN} \leq 30V$, $T_J = -25 \sim 125^\circ C$
		-	-	0.5		$5mA \leq I_O \leq 1A$, $T_J = -25 \sim 125^\circ C$
Output Voltage Drift	$\Delta V_O / \Delta T$	-	-1	-	mV/ $^\circ C$	$I_O = 5mA$, $T_J = -25 \sim 125^\circ C$
Output Noise Voltage	V_N	-	90	-	$\mu V / V_O$	$10Hz \leq f \leq 100KHz$
Ripple Rejection	RR	54	70	-	dB	$18.5V \leq V_{IN} \leq 28.5V$, $f = 120Hz$, $T_J = -25 \sim 125^\circ C$
Dropout Voltage	V_D	-	2	-	V	$I_O = 1A$
Output Resistance	R_O	-	19	-	m Ω	$f = 1kHz$
Short Circuit Current	I_{SC}	-	230	-	mA	
Peak Current	I_{PK}	-	2.1	-	A	

Note:

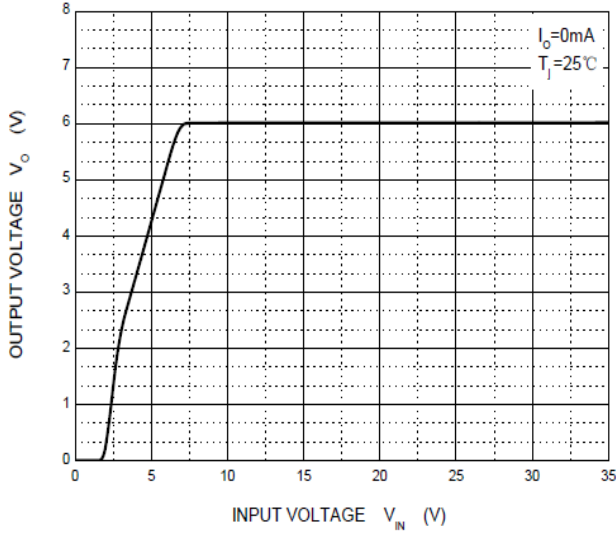
1. Pulse test.

SE7805 CHARACTERISTICS CURVE

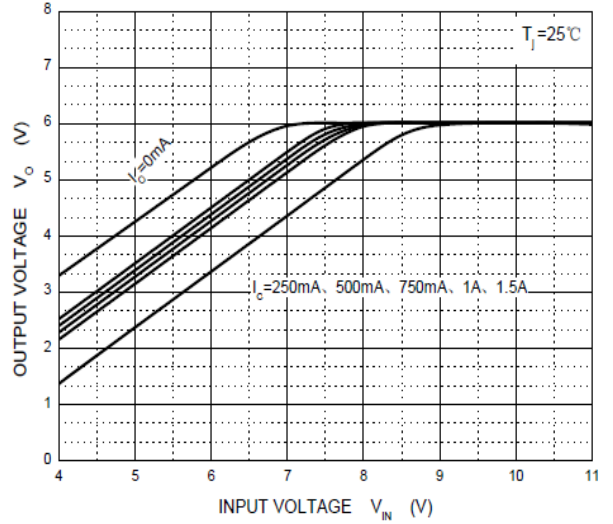


SE7806 CHARACTERISTICS CURVE

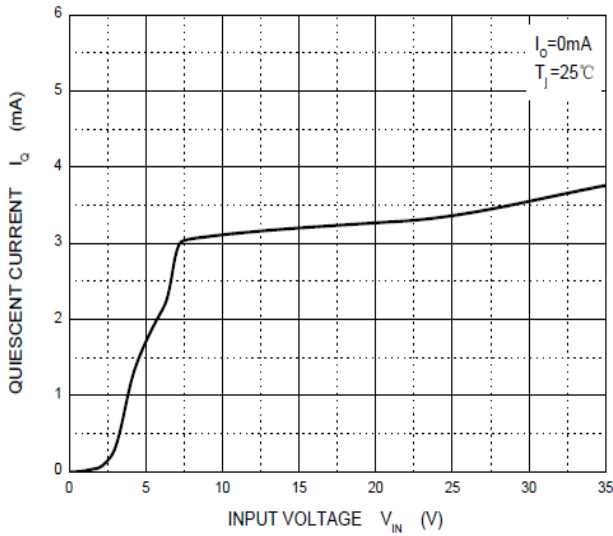
Output Characteristics



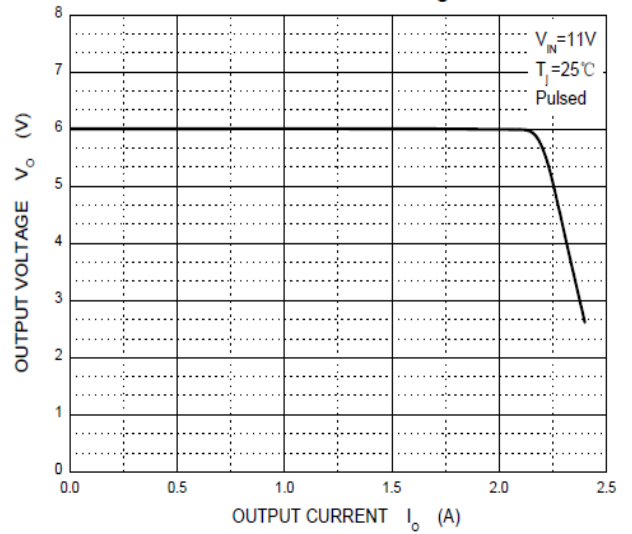
Dropout Characteristics



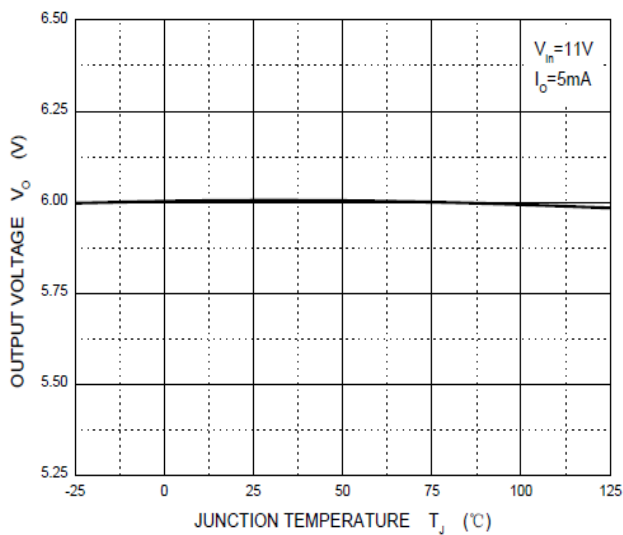
Quiescent Current vs Input Voltage



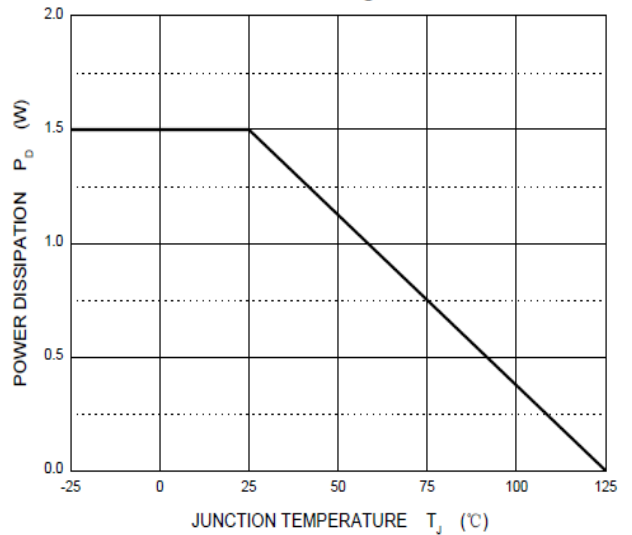
Current Cut-off Grid Voltage



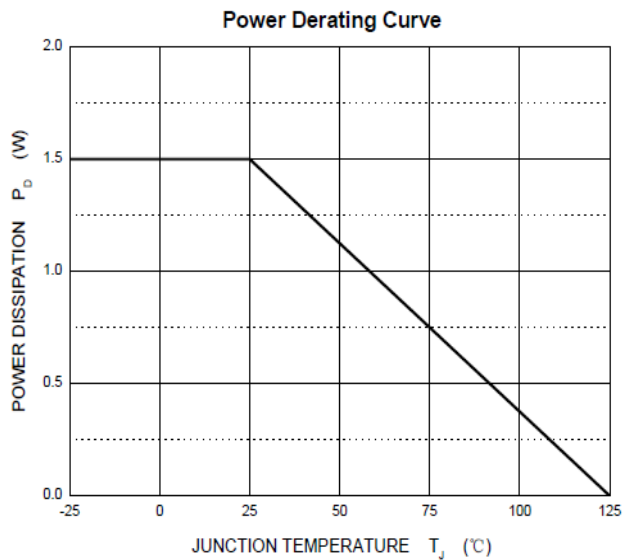
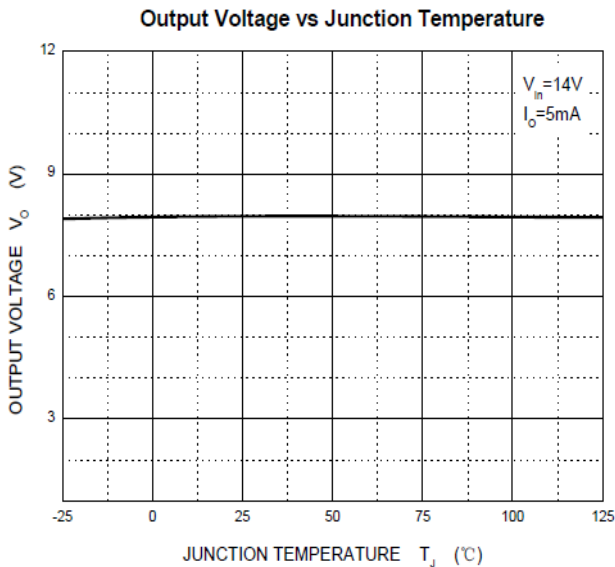
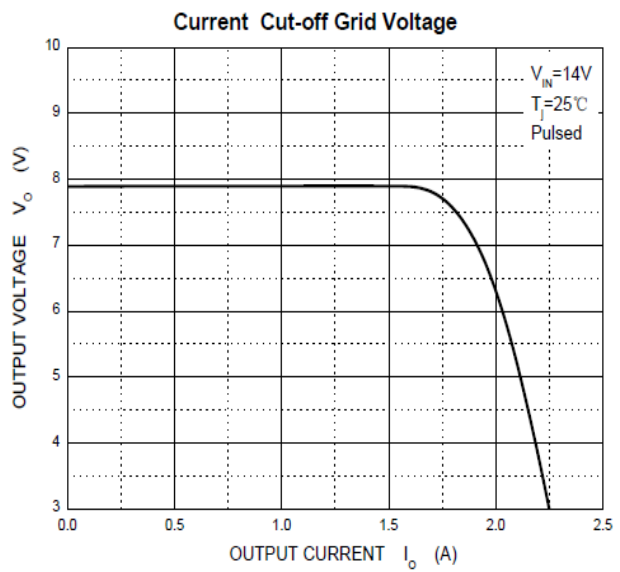
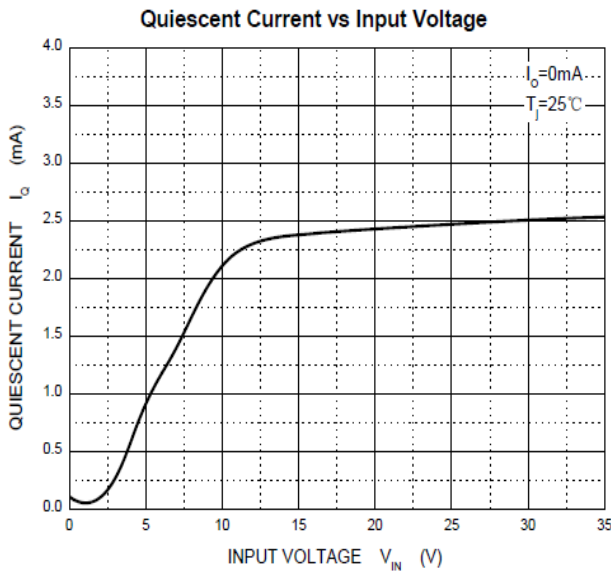
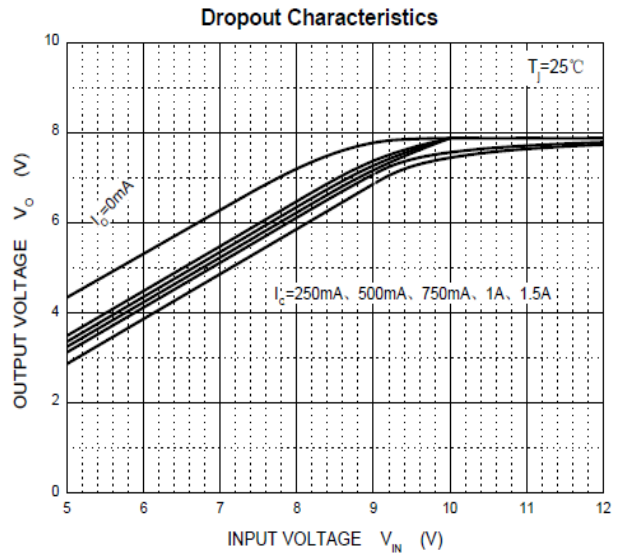
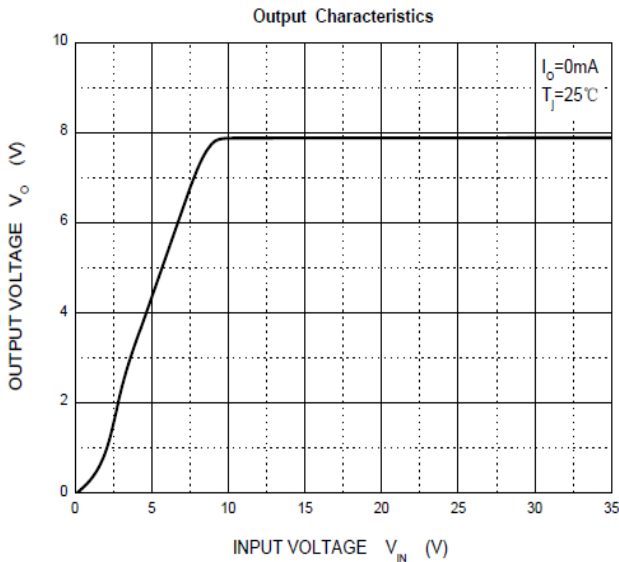
Output Voltage vs Ambient Temperature



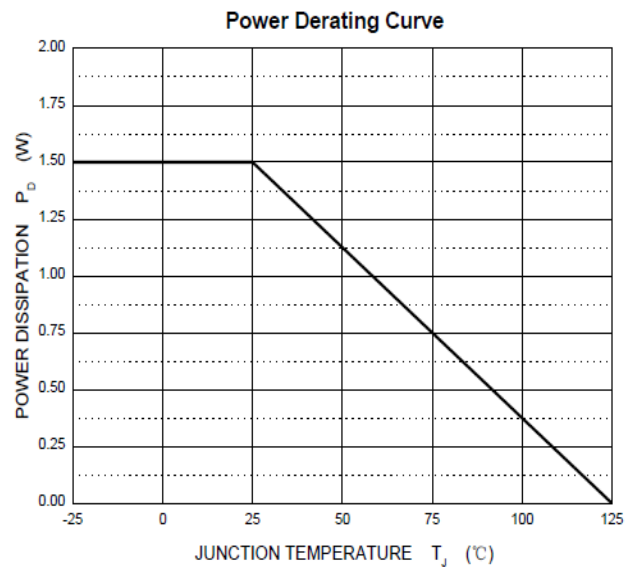
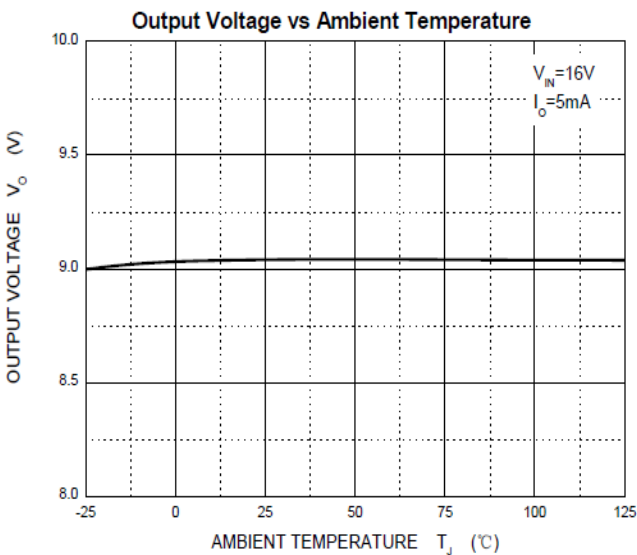
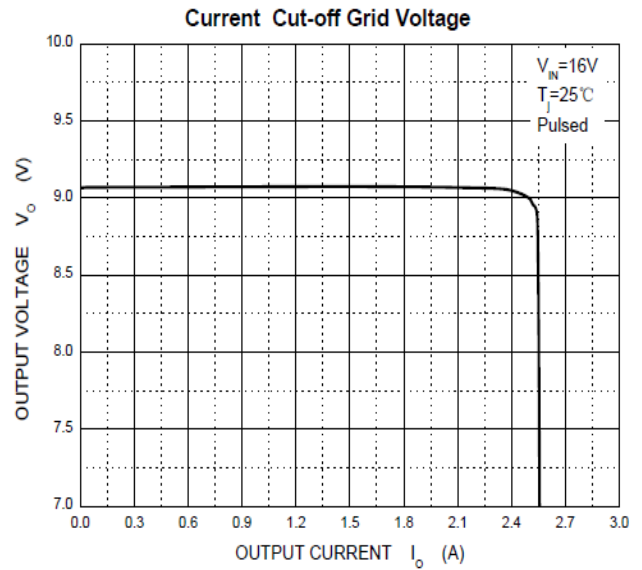
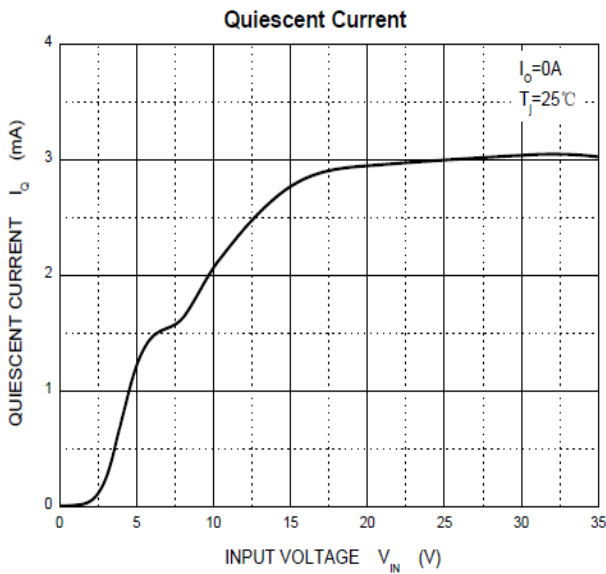
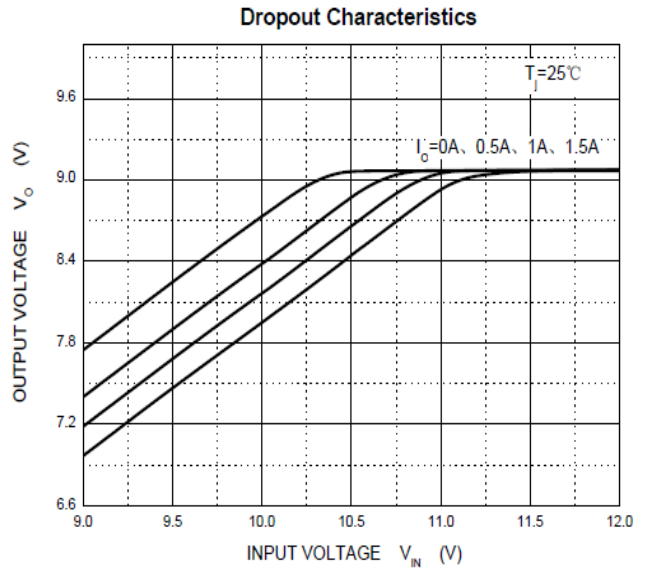
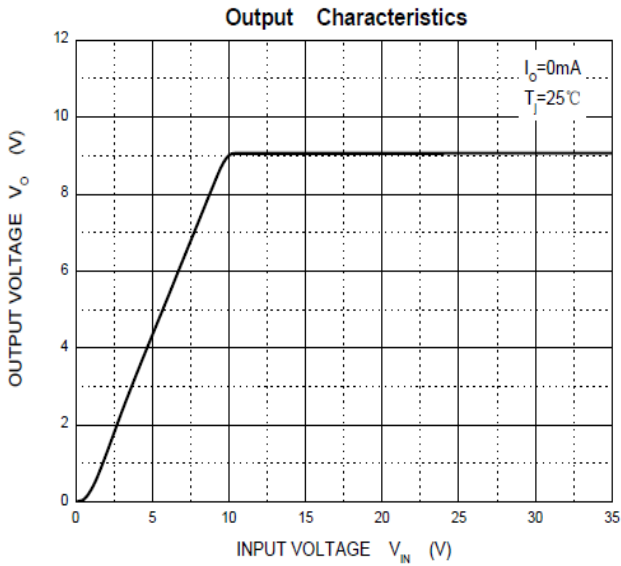
Power Derating Curve



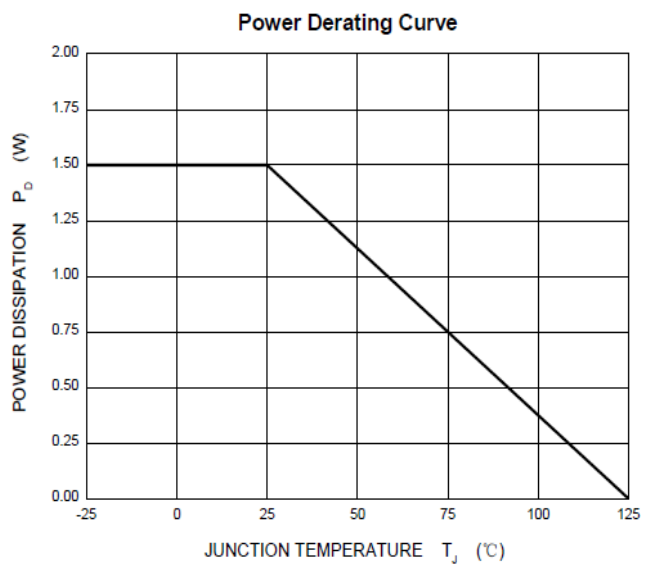
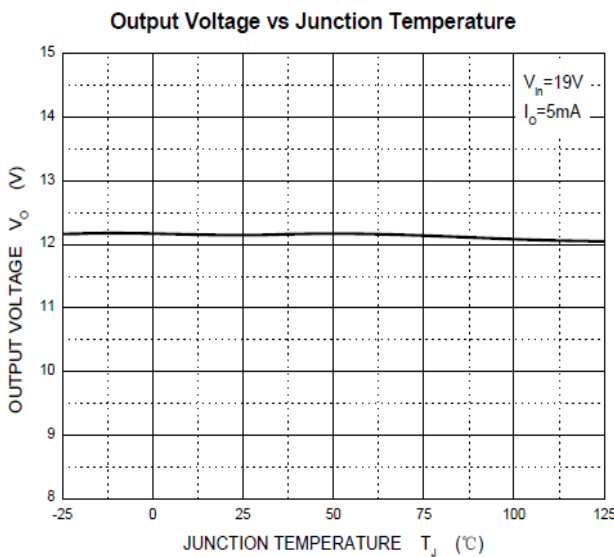
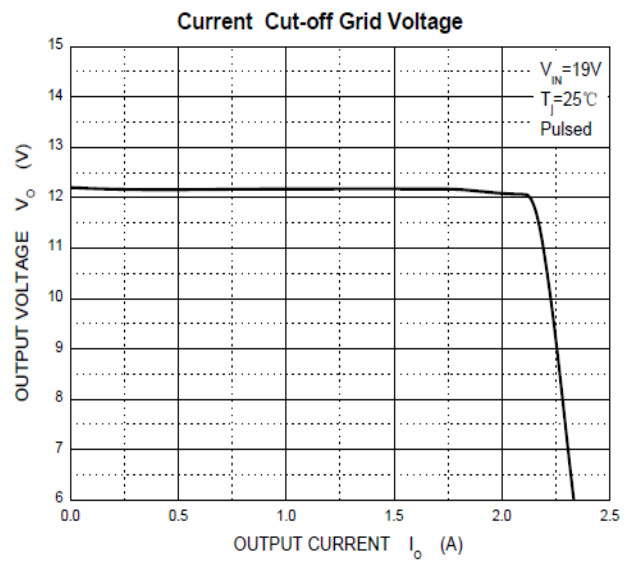
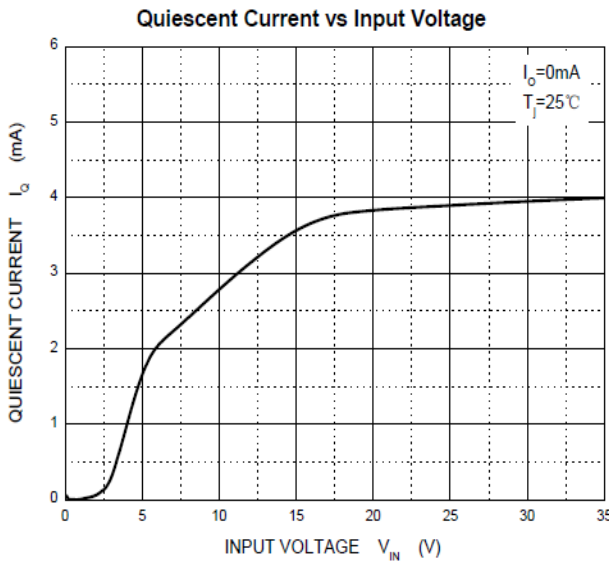
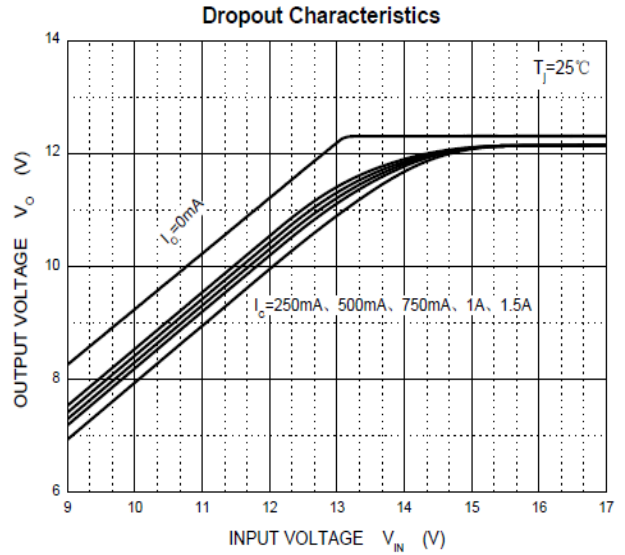
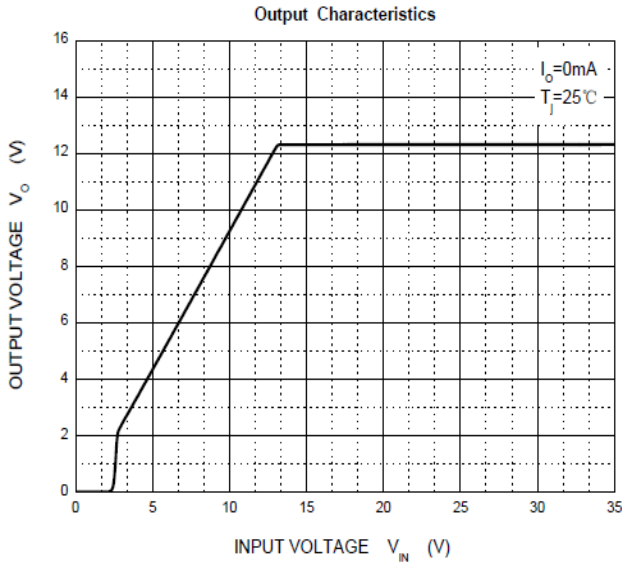
SE7808 CHARACTERISTICS CURVE



SE7809 CHARACTERISTICS CURVE

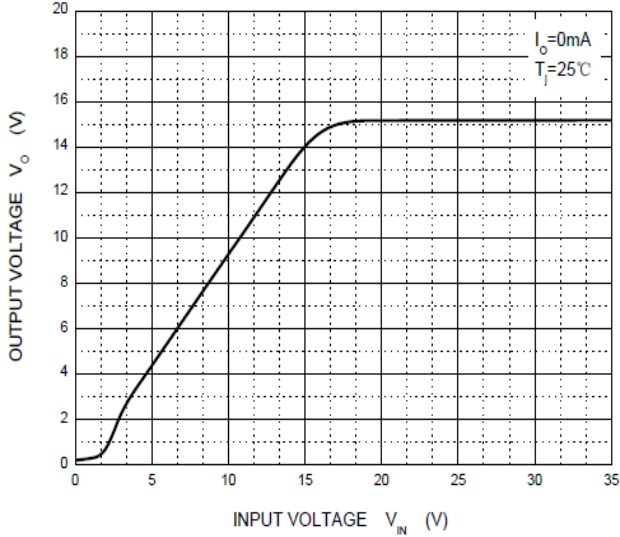


SE7812 CHARACTERISTICS CURVE

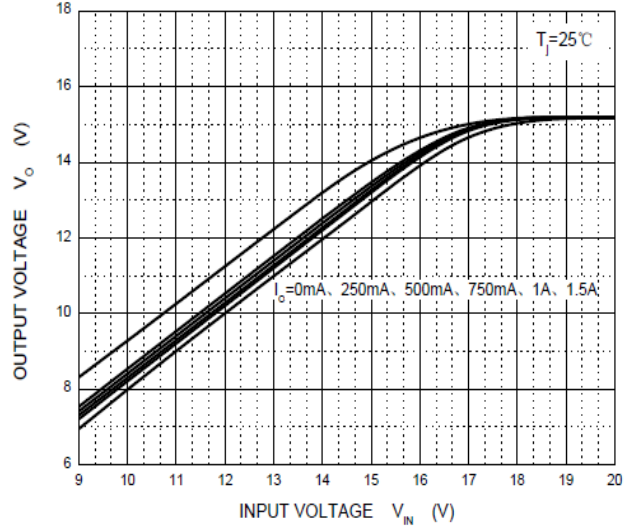


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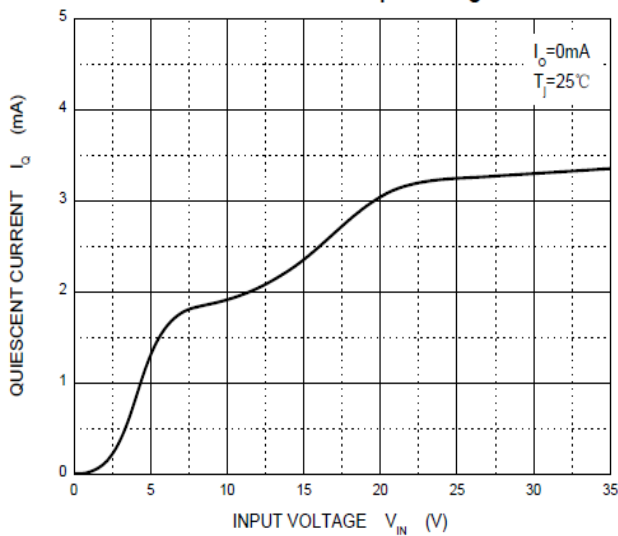
Output Characteristics



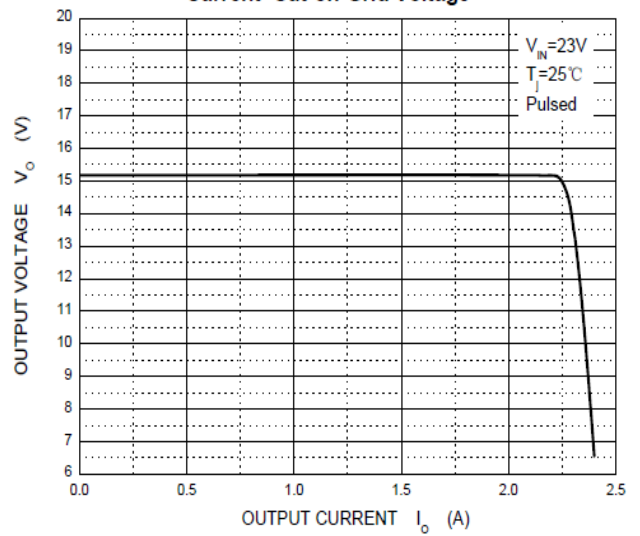
Dropout Characteristics



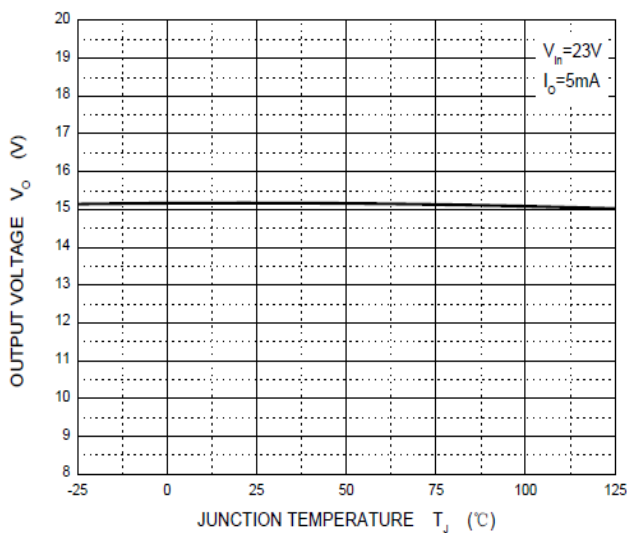
Quiescent Current vs Input Voltage



Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

