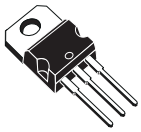
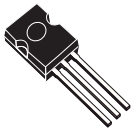
L2605
L2685-L2610

LOW DROPOUT VOLTAGE REGULATORS

- OUTPUT VOLTAGE OF 5, 8.5 AND 10 V
- OUTPUT CURRENT UP TO 500 mA
- NO EXTERNAL COMPONENTS
- LOW DROP OUT VOLTAGE
- OVERVOLTAGE PROTECTION (± 100V)
- REVERSE VOLTAGE PROTECTION
- SHORT CIRCUIT PROTECTION
- CURRENT LIMITING
- THERMAL SHUTDOWN



TO-220



SOT-82

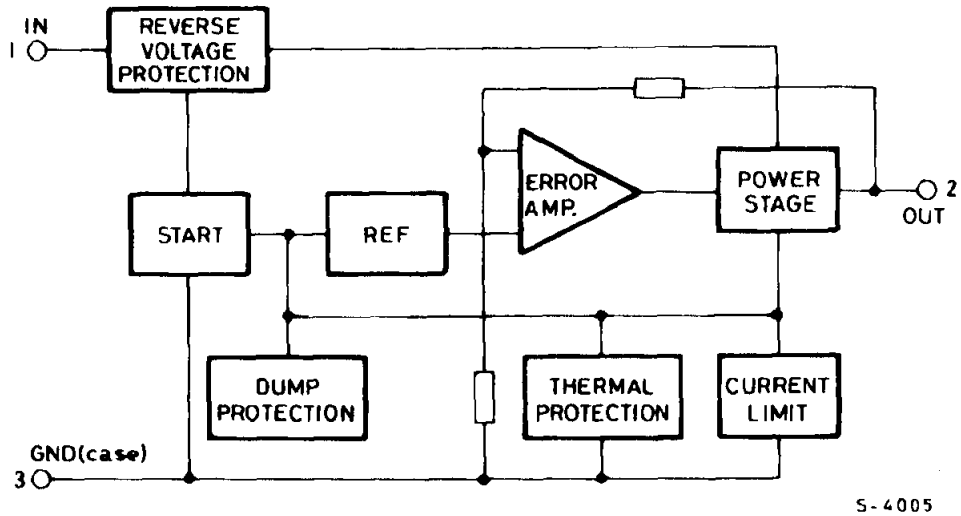
DESCRIPTION

The L2600 series og three terminal positive regulators is specially designed to stabilize power supplies car instrumentation in vehicles with 12V battery. Available with output voltages equal to 5V, 8.5 V, 10V, they can supply an output current to 500mA.

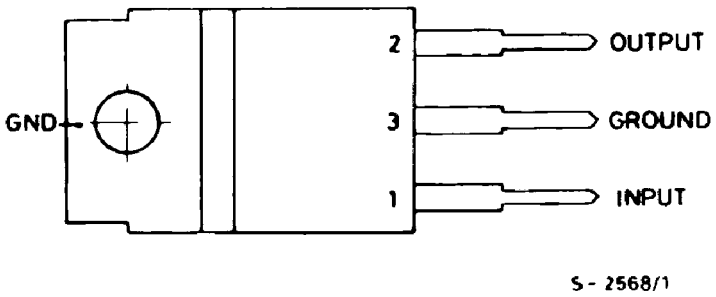
These devices are protected against load dump and field decay transients (±100V), reverse battery, short circuit and thermal overload.

Order codes		Output Voltage
TO-220	SOT-82	
L2605V	L2605X	5V
L2685V	L2685X	8.5V
L2610V	L2610X	10V

BLOCK DIAGRAM



PIN CONNECTION (Top view)



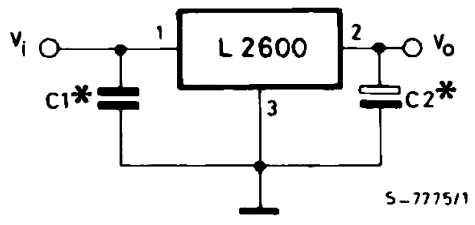
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
	DC Input Voltage	35	V
	DC Input Reverse Voltage	-28	V
	Transient Input Overvoltage:		
	Load Dump:	+100	V
	$5ms \leq t_{rise} \leq 10ms$		
	τ_f Fall Time Costant = 100ms,		
	$R_{source} \geq 0.5\ \Omega$		
	Field Decay:	-100	V
	$5ms \leq t_{fall} \leq 10ms$		
	τ_r Rise Time Costant = 33ms,		
	$R_{source} \geq 10\Omega$		
P_D	Power Dissipation	internally Limited	
T_j, T_{stg}	Junction and Storage Temperature Range	-55 to 150	°C

THERMAL DATA

Symbol	Parameter		SOT-82	TO-220	Unit
$R_{th\text{-}j\text{-}case}$	Thermal resistance junction-case	Max	8	4	°C/W
$R_{th\text{-}j\text{-}amb}$	Thermal resistance junction-ambient	Max	100	75	°C/W

APPLICATION CIRCUIT



(*) **Note** : C1 and C2 are only needed if the load capacitance exceeds 1000 pF, Recommended values are C1 = 0.1 µF and C2 ≥100 µF.

ELECTRICAL CHARACTERISTCS (T_j = 25 °C, V_i = 14V, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_o	Output Voltage	I_o = 500 mA V_i = 12 to 16 V (L2605) V_i = 12 to 16 V (L2685) V_i = 12 to 16 V (L2610)	 4.80 8.15 9.60	 5.00 8.50 10.00	 5.20 8.85 10.40	 V V V
V_i	Operating Input	See Note (*)			28	V
$\frac{\Delta V_O}{V_O}$	Line Regulation	I_o = 50 mA; V_i = 12 to 20 V		2	8	mV/V
	Load Regulation	V_i = 14 V I_o = 50 to 500 mA		4	9	mV/V
ΔV_{i-o}	Dropout Voltage	I_o = 500 mA			1.9	V
I_d	Quiescent Current	I_o = 50 mA		20	45	mA
$\frac{\Delta V_O}{\Delta T}$	Output Voltage Drift	I_o = 50 mA V_i = 14 V; T_{amb} = - 12 to 80 °C		- 1		mV/°C
I_{sc}	Output Short Circuit Current			1.1	1.8	A
SVR	Supply Voltage Rejection	V_i = 16V; V_i = 2 V f = 100 Hz; I_o = 500 mA		60		dB
R_O	Output Resistance	I_o = 500 mA		0.05		Ω
e_N	Output Noise Voltage	BW = 100 Hz to 10 KHz		20		μV

(*) **Note:** For DC innput voltage 28 V <V_i <35 V the device is not operating

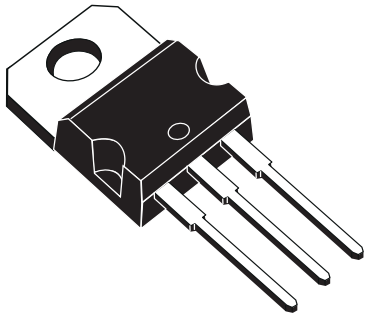
LECTRICAL CHARACTERISTCS (T_j = 25 °C, V_i = 14V, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_o	Output Voltage	I_o = 500 mA V_i = 12 to 16 V (L2605) V_i = 12 to 16 V (L2685) V_i = 12 to 16 V (L2610)	 4.70 8.00 9.40	 5.00 8.50 10.00	 5.30 9.05 10.60	 V V V
V_i	Operating Input	See Note (1)			26	V
$\frac{\Delta V_O}{V_O}$	Line Regulation	I_o = 50 mA; V_i = 12.5 to 20 V		3	12	mV/V
	Load Regulation	V_i = 14 V; I_o = 50 to 500 mA	5	13		mV/V
ΔV_{i-o}	Dropout Voltage	I_o = 500 mA			2.5	V
I_d	Quiescent Current	I_o = 50 mA		29	65	mA
I_{sc}	Output Short Circuit Current			1.1	2.1	A

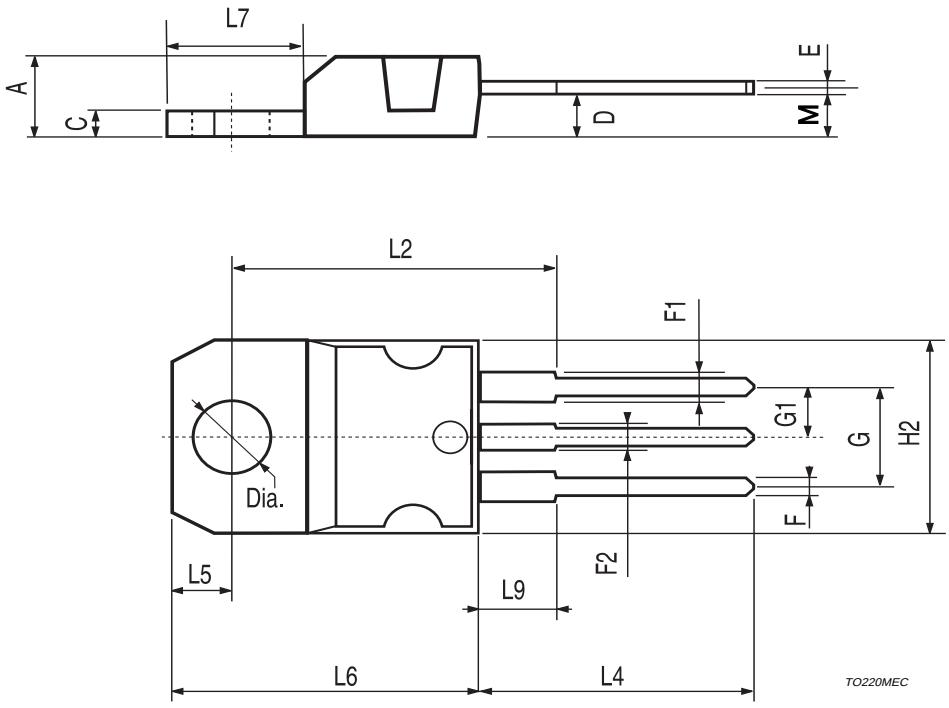
Notes: 1. For a DC input voltage 26 V < V_i < 35 V the device is not operating.
2. The limits are guarandeed by design correlation and statistical control on production samples over the indicated temperature and supply voltage ranges.

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.40		2.70	0.094		0.106
H2	10.0		10.4	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.20		6.60	0.244		0.260
L9	3.50		3.93	0.137		0.154
M		2.6			0.102	
Dia	3.75		3.85	0.147		0.151

OUTLINE AND MECHANICAL DATA

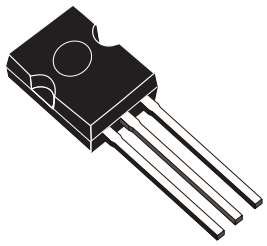


Versawatt (TO-220)

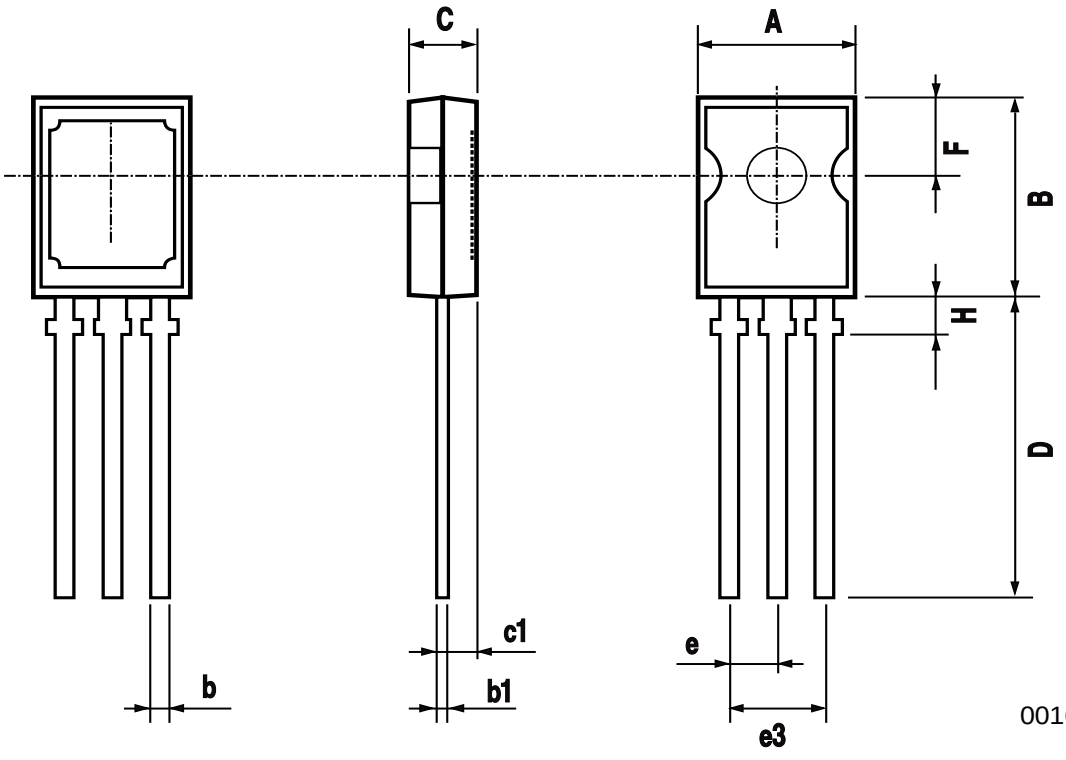


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.425
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.094		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
H			2.54		0.100	

OUTLINE AND MECHANICAL DATA



SOT-82



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