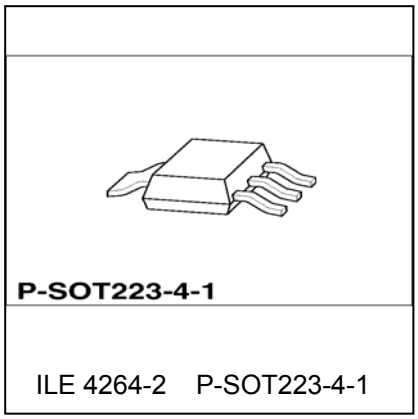
5-V/100mA Low Power Low-Drop Fixed-Voltage Regulator with Low Current Consumption

ILE4264-2

The ILE 4264-2 is a monolithic integrated Low power low-drop fixed voltage regulator 5-V/100mA with low current consumption. The ILE 4264-2 is specially designed to create power source with 5V output voltage, loads up to 100 mA and drop voltage less than 0,5V. The regulator is designed to supply electronic device in automotive applications and some another applications. The ILE 4264-2 is equipped with additional protection against overvoltage of both polarities, load current limitation, short-circuit and over temperature shutdown of output voltage. The IC is supplied in chip (unpackaged) form.

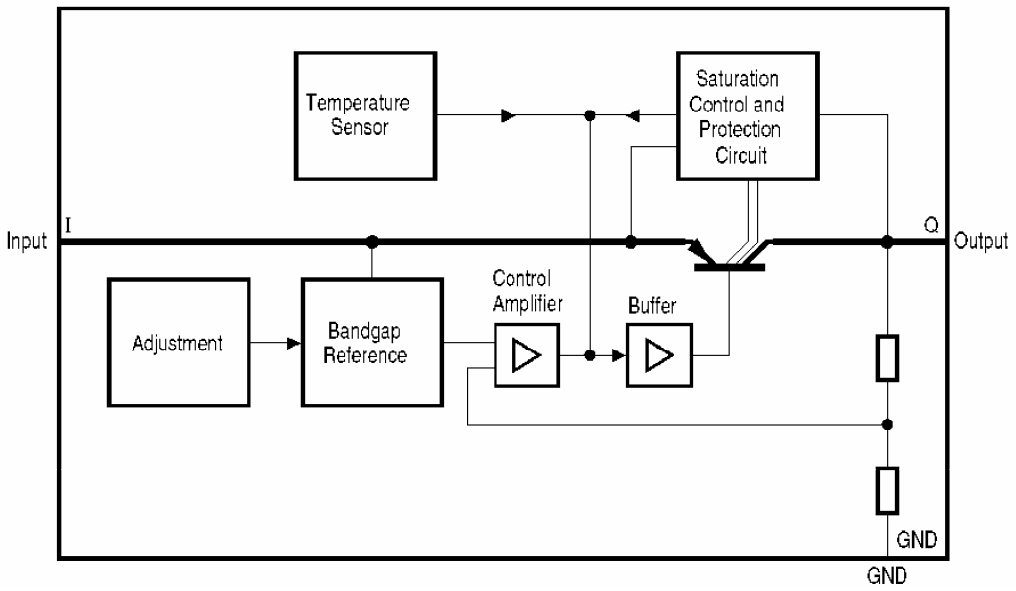


ILE 4264-2 P-SOT223-4-1

Features

- Output voltage tolerance 5±3% (±2% up to 50 mA)
- Low-drop voltage
- Current capability up to150 mA
- Very low current consumption
- Over temperature protection
- Reverse polarity proof Short-circuit proof
- Junction temperature -40 to +150°C
- Suitable for use in automotive electronics
- Short-circuit proof

Block Diagram



Pin description (for P-SOT223-4 package)

Pin	Symbol	Function
01	I	Input voltage; block to ground directly with a ceramic capacitor
03	Q	5-V output voltage; block to ground with a capacitor
02, 04	GND	Ground

Typical electric parameters

(U_I=13,5 V, -40 °C ≤ T_J ≤ 125 °C, unless specified otherwise)

Parameter, unit of measurement	Symbol	Mode of measurement	Typical value
Power Supply Ripple Rejection, dB	PSRR	f_r = 100 Hz, U_r = 3 V (peek-to-peek)	68

Absolute Maximum Ratings

Parameter, symbol	Unit	Maximum Ratings		Absolute Maximum Ratings	
		Min	Max	Min	Max
Junction temperature, T_J	°C	-40*	125	-40*	150
Storage temperature, T_{stg}	°C	-	-	-50	150
Input voltage, U_I	V	6	28	-42	45
Input current, I_I	mA	-	Internally limited	-	Internally limited
Ground pin current, I_{GND}	mA	-	-	50***	-
Output voltage, U_Q	V	4,9	5,1	-0,3***	32***
Output current (pin 3), I_Q	mA	-	Internally limited	-	Internally limited
Thermal Resistances Junction-case , $R_{th\ jc}$, for conventional case P-SOT223-4-1	°C/W	-	25**	-	25**
Thermal Resistances Junction-ambient, $R_{th\ ja}$, for conventional case P-SOT223-4-1, - without heat sink	°C/W	-	220**	-	220**

* Ambient temperature

** $R_{th\ ja}$ - Thermal Resistances Junction-ambient

*** - Voltage is not applied to pin I

Thermal resistance junction ambient for IC with heat dissipater is calculated by formula:

$$R_{th\ ja} = R_{th\ jc} + R_{th\ ca}, \quad (1)$$

Rth jc - thermal resistance junction case, oC /W.
Application circuit and heat dissipater have to provide $T_J \le 125$ °C.

Maximum power Ptot,Bт, dissipated by IC for TA , is calculated by formula:

$$P_{tot} = (125 - T_A) / R_{th\ ja}, \quad (2)$$

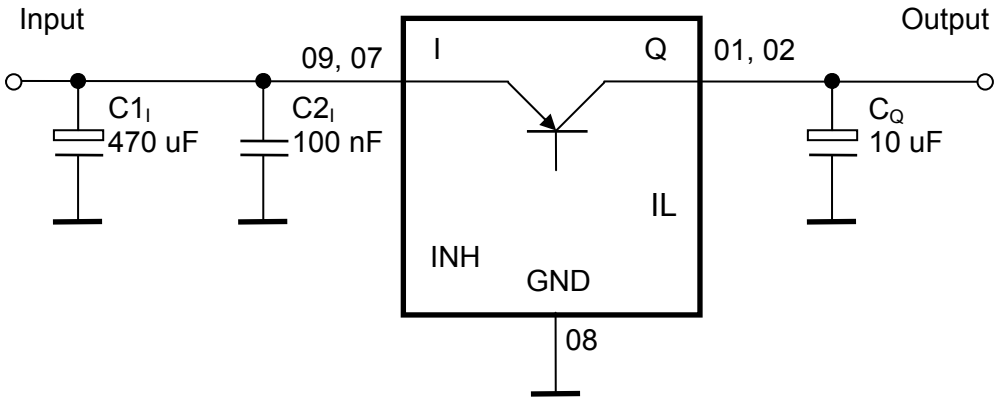
125 – maximum permitable operating junction temperature, °C

Electric parameters

(U_I=13,5 V, -40 °C ≤ T_J ≤ 125 °C, unless specified otherwise)

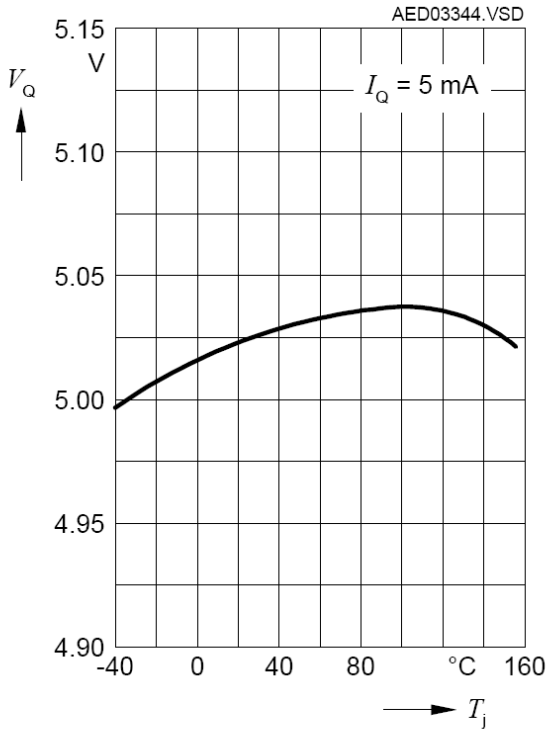
Parameter, unit of measurement	Symbol	Mode of measurement	Typical value		Note
			Min	Max	
Output voltage, V	U_Q	9 V ≤ U_I ≤ 16 V 5 mA ≤ I_Q ≤ 50 mA	4,9	5,1	
		6 V ≤ U_I ≤ 21 V 5 mA ≤ I_Q ≤ 100 mA	4,85	5,15	
Maximum output current, mA	I_{Qmax}	4,8 V ≤ U_Q ≤ 5,2 V	150	500	
Consumption current, mA, $I_q = I_I - I_Q$	I_q	I_Q=0,1 mA, (T_J ≤ 85°C)	-	0,06	
		I_Q = 0,1 mA	-	0,07	
		I_Q = 50 mA	-	4	
Drop-out voltage, V	U_{Dr}	I_Q = 100 mA	-	0,5	1
Load regulation, mV	$\Delta U_{Q(I)}$	1 mA ≤ I_Q ≤ 100 mA U_I = 13,5 V	-	90	
Line regulation, mV	$\Delta U_{Q(U)}$	6 V ≤ U_I ≤ 28V I_Q = 1 mA	-	30	
Notes 1 Drop voltage $U_{Dr} = U_I - U_Q$ (measured when the output voltage V_Q has dropped 100 mV from the nominal value obtained at V_I = 13.5 V).					

ILE4264-2 Application Circuit

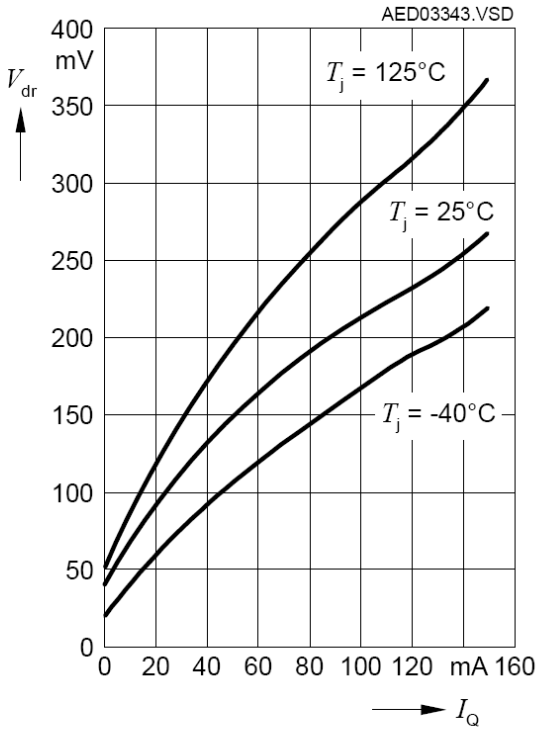


Typical Performance Characteristics

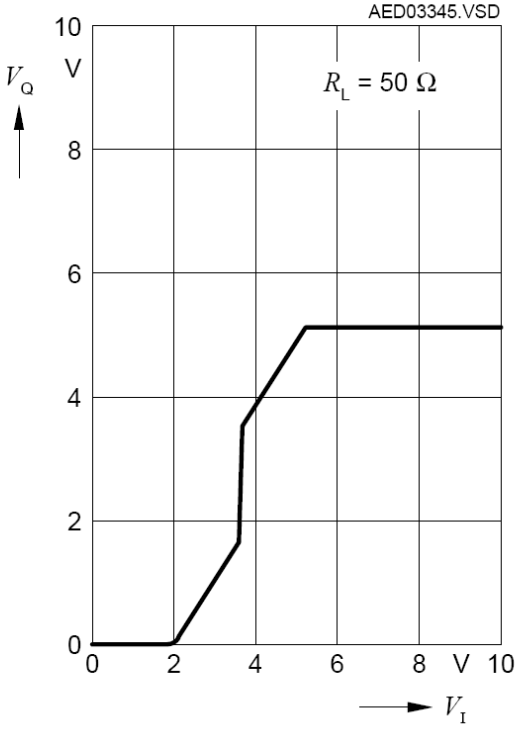
Output Voltage V_Q versus Temperature T_j



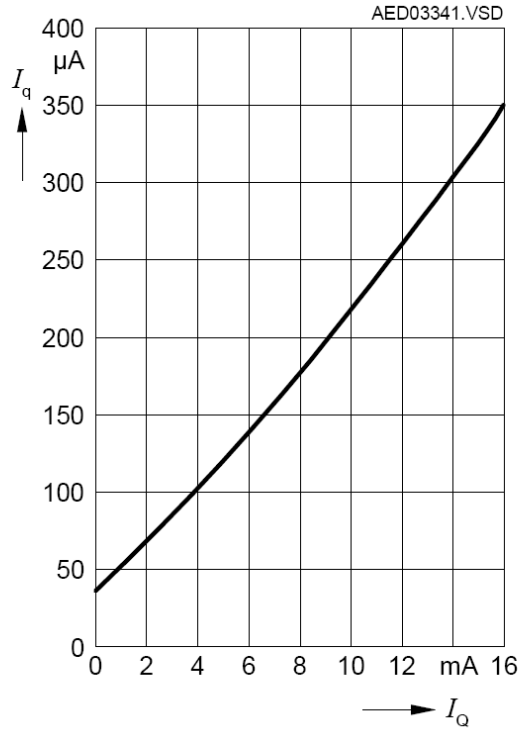
Drop Voltage V_{dr} versus Output Current I_Q



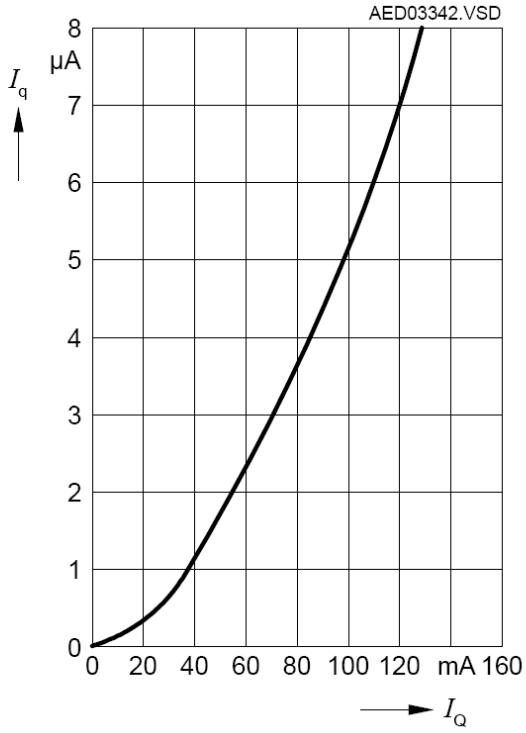
Output Voltage V_Q versus Input Voltage V_I



Current Consumption I_q versus Output Current I_Q



Current Consumption I_q versus Output Current I_Q



Package Dimensions

P-SOT 223-4-1