

## 5-V/100mA Low Power Low-Drop Fixed-Voltage Regulator with low current consumption

**ILE4264-2G**

The ILE 4264-2G is a Monolithic Integrated Low Power Low-Drop Fixed Voltage Regulator 5-V/100mA with low current consumption. The ILE 4264-2G 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 4264-2G is equipped with additional protection against overvoltage of both polarities, load current limitation, short-circuit and over temperature shutdown of output voltage.



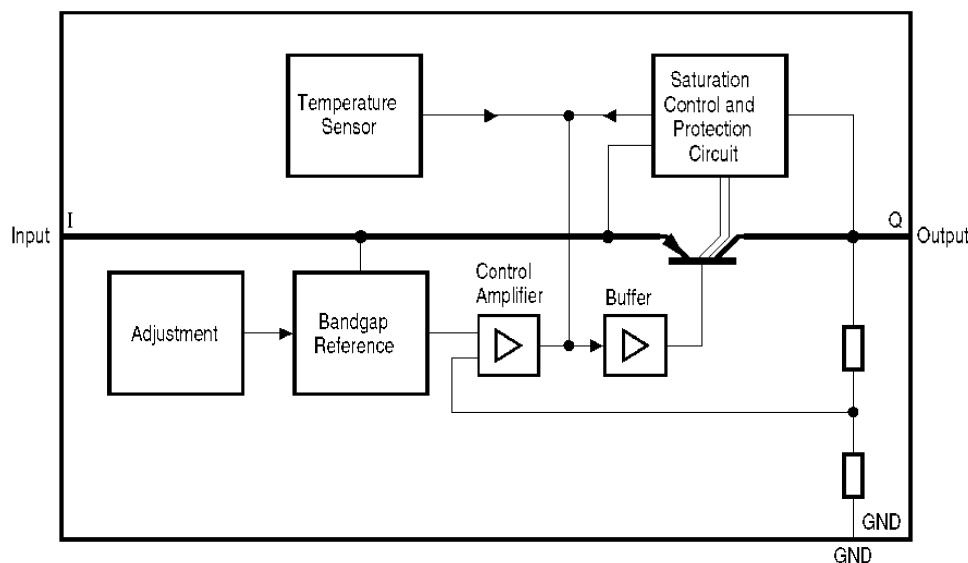
### ORDERING INFORMATION

Device	Operating Temperature Range	Package	Packing
ILE4264-2G	T <sub>J</sub> = -40° to 125° C	SOT-223	T&R

### Features

- Output voltage tolerance 5V ±3% (±2% up to 50 mA)
- Low-drop voltage
- Current capability up to 150 mA
- Very low current consumption
- Over temperature protection
- Reverse polarity proof
- Suitable for use in automotive electronics
- Short-circuit proof
- AEC-Q100 Qualified
- ESD Protection : HBM ±8.000V / MM ±400V / CDM ±2.000V

### Block Diagram



**Pin Description (for SOT-223 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 ( $C_a \geq 10 \mu F$ , $ESR \leq 4\Omega$ )
02, 04	GND	Ground

**Absolute Maximum Ratings**

Parameter	Symbol	Min	Max	Unit	Note
Input voltage	$V_I$	-42	45	V	
Input current	$I_i$				limited internally
Ground pin current	$I_{GND}$	50	-	mA	
Output voltage	$V_Q$	-0.3	32	V	
Output current	$I_Q$				limited internally
Junction temperature	$T_J$	-40	150	°C	
Storage temperature	$T_{stg}$	-50	150	°C	

\* Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

**Operating Range**

Parameter	Symbol	Min	Max	Unit
Input voltage	$V_I$	6	28	V
Junction temperature	$T_J$	-40	125	°C

**Thermal Resistances**

Parameter	Symbol	Min	Max	Unit
Thermal Resistances Junction-case , for conventional case P-SOT223-4-1	$R_{th\ jc}$	-	25*	°C/W
Thermal Resistances Junction-ambient, for conventional case P-SOT223-4-1, - without heat sink	$R_{th\ ja}$	-	220*	°C/W

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

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

$$R_{th\ ja} = R_{th\ jc} + R_{th\ ca} \tag{1}$$

$R_{th\ jc}$  - thermal resistance junction case, °C /W.

Application circuit and heat dissipater have to provide  $T_J \leq 125 \text{ °C}$ .

Maximum power  $P_{tot}$ , BT, dissipated by IC for  $T_A$ , is calculated by formula:

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

125 – maximum permitable operating junction temperature, °C

### Electrical Characteristics

( $V_I=13.5\text{ V}$ ,  $-40\text{ °C} \leq T_J \leq 125\text{ °C}$ , unless specified otherwise)

Parameter	Symbol	Test Conditions	Limit Value			Unit	Note
			Min	Typ	Max		
Output voltage	$V_Q$	$9\text{ V} \leq V_I \leq 16\text{ V}$ $5\text{ mA} \leq I_Q \leq 50\text{ mA}$	4.9	5.0	5.1	V	
		$6\text{ V} \leq V_I \leq 21\text{ V}$ $5\text{ mA} \leq I_Q \leq 100\text{ mA}$	4.85	5.0	5.15		
Maximum output current	$I_{Qmax}$	$4.8\text{ V} \leq V_Q \leq 5.2\text{ V}$	150		500	mA	
Consumption current $I_q = I_I - I_Q$	$I_q$	$I_Q=0.1\text{ mA}$ , ( $T_J \leq 85\text{ °C}$ )	-		0.06	mA	
		$I_Q = 0.1\text{ mA}$	-		0.07		
		$I_Q = 50\text{ mA}$	-		4		
Drop-out voltage	$V_{Dr}$	$I_Q = 100\text{ mA}$	-	0.25	0.5	V	1
Load regulation	$\Delta V_{Q(I)}$	$1\text{ mA} \leq I_Q \leq 100\text{ mA}$ $V_I = 13.5\text{ V}$	-		90	mV	
Line regulation	$\Delta V_{Q(V)}$	$6\text{ V} \leq V_I \leq 28\text{ V}$ $I_Q = 1\text{ mA}$	-		30	mV	

Note:

<sup>1</sup> Drop voltage  $V_{Dr} = V_I - V_Q$  (measured when the output voltage  $V_Q$  has dropped 100 mV from the nominal value obtained at  $V_I = 13.5\text{ V}$ ).

### Typical Performance Parameters

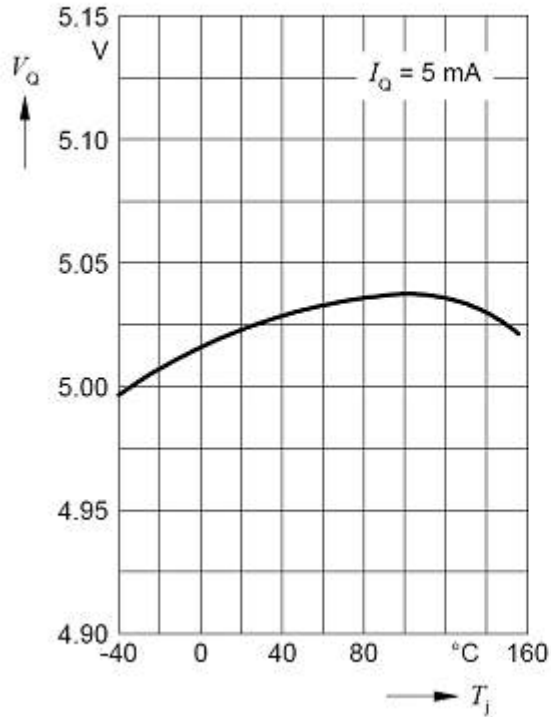
( $V_I=13.5\text{ V}$ ,  $-40\text{ °C} \leq T_J \leq 125\text{ °C}$ , unless specified otherwise)

Parameter	Symbol	Test Condition	Typical Value	Unit
Power Supply Ripple Rejection	PSRR	$f_r = 100\text{ Hz}$ , $V_r = 3\text{ V}$ (peek-to-peek)	68	dB

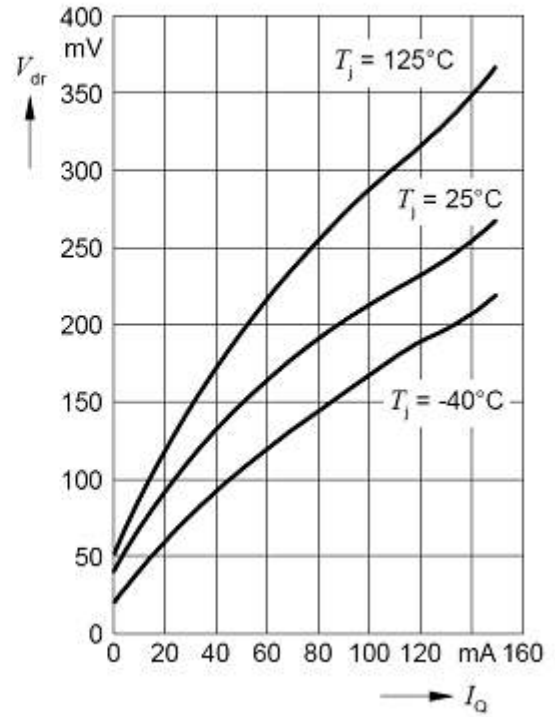


Typical Performance Characteristics

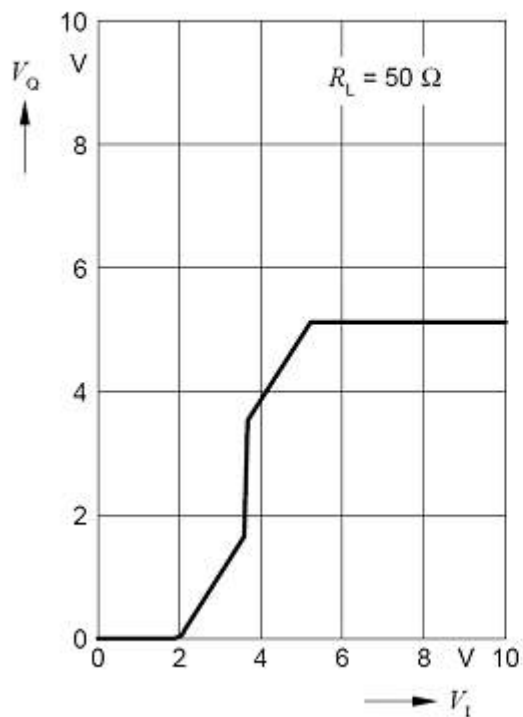
Output Voltage  $V_O$  versus Temperature  $T_j$



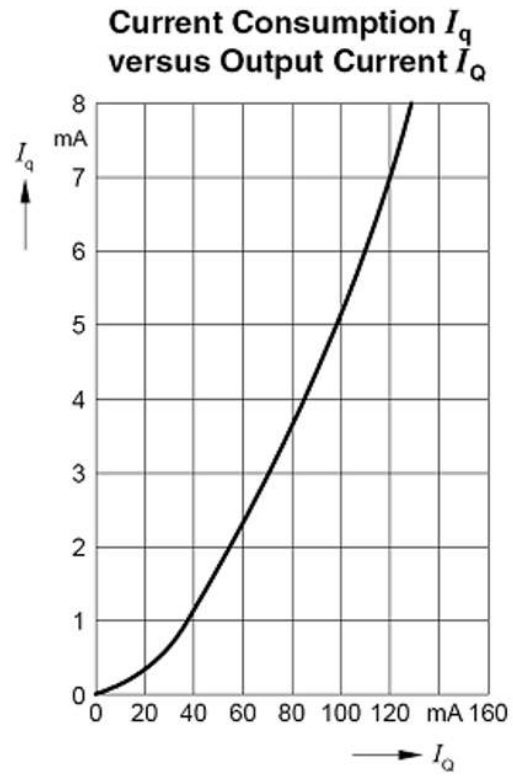
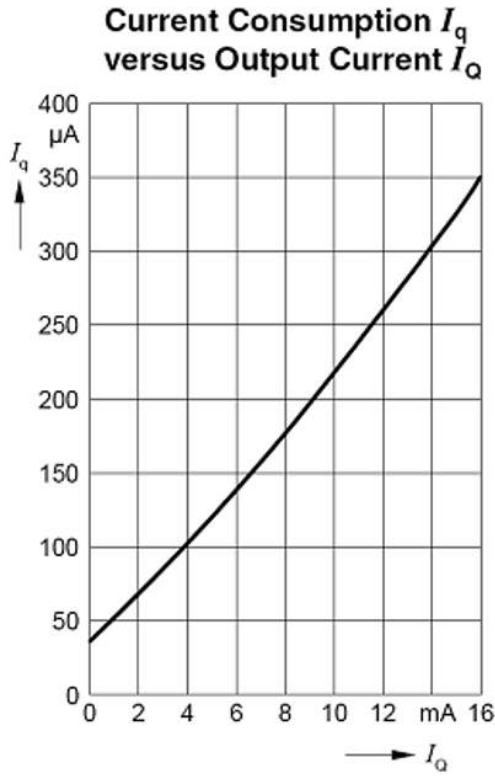
Drop Voltage  $V_{dr}$  versus Output Current  $I_O$



Output Voltage  $V_O$  versus Input Voltage  $V_I$



Typical Performance Characteristics  
(continue)



Package Dimensions

