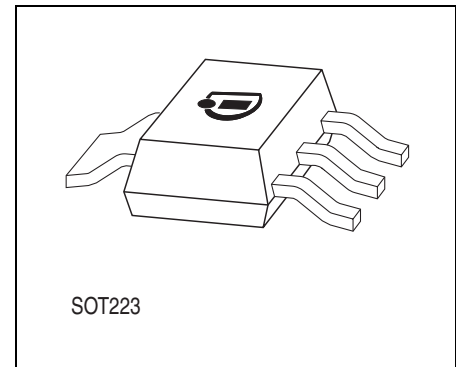




Features

- Output voltage tolerance $\leq \pm 2\%$
- Low-drop voltage
- Very low current consumption
- Overtemperature protection
- Short-circuit proof
- Suitable for use in automotive electronics
- Reverse polarity
- Green Product (RoHS compliant)
- AEC Qualified



Functional Description

TLE 4264 is a 5-V low-drop fixed-voltage regulator in an PG-SOT223-4 package. The IC regulates an input voltage V_I in the range $5.5\text{ V} < V_I < 45\text{ V}$ to $V_{\text{Qrated}} = 5.0\text{ V}$. The maximum output current is more than 120 mA. This IC is shortcircuit-proof and features temperature protection that disables the circuit at overtemperature.

Dimensioning Information on External Components

The input capacitor C_i is necessary for compensating line influences. Using a resistor of approx. $1\ \Omega$ in series with C_i , the oscillating of input inductivity and input capacitance can be damped. The output capacitor C_Q is necessary for the stability of the regulating circuit. Stability is guaranteed at values $C_Q \geq 10\ \mu\text{F}$ and an $\text{ESR} \leq 10\ \Omega$ within the operating temperature range.

Type	Package
TLE 4264 G	PG-SOT223-4

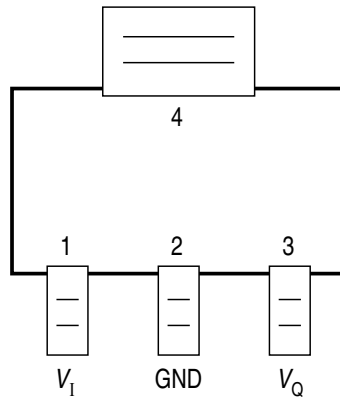


Figure 1 Pin Configuration (top view)

Table 1 Pin Definitions and Functions

Pin	Symbol	Function
1	V_I	Input voltage; block to ground directly on IC with ceramic capacitor
2, 4	GND	Ground
3	V_Q	5-V output voltage; block to ground with $\geq 10 \mu\text{F}$ capacitor, $\text{ESR} \leq 10 \Omega$

Circuit Description

The control amplifier compares a reference voltage, which is kept highly precise by resistance adjustment, to a voltage that is proportional to the output voltage and drives the base of the series transistor via a buffer. Saturation control, working as a function of load current, prevents any over-saturation of the power element. The IC is protected against overload, overtemperature and reverse polarity.

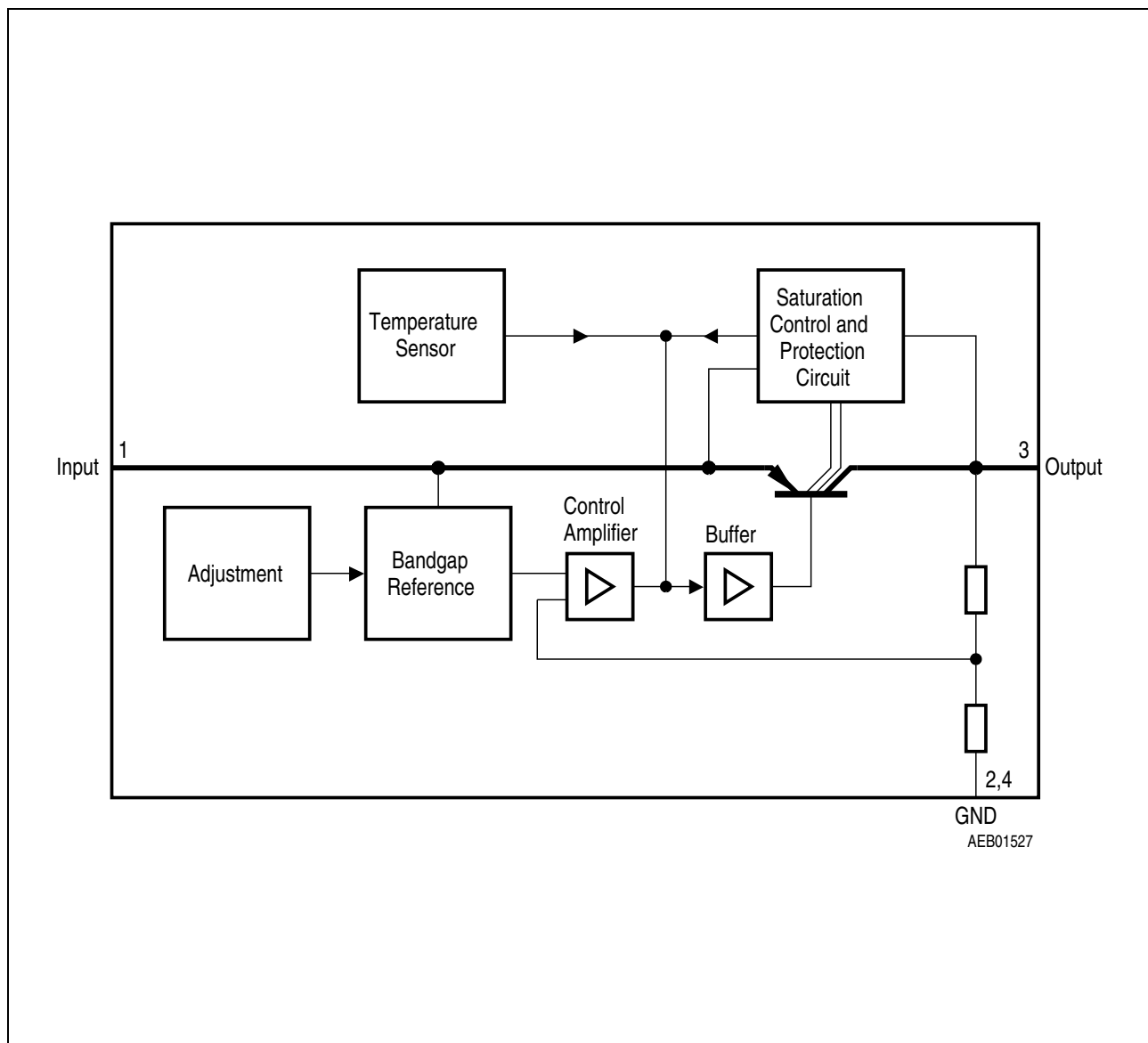


Figure 2 **Block Diagram**

Table 2 Absolute Maximum Ratings
 $T_j = -40 \text{ to } 150 \text{ }^{\circ}\text{C}$

Parameter	Symbol	Limit Values		Unit	Notes
		Min.	Max.		
Input					
Input voltage	V_I	-42	45	V	—
Input current	I_I	—	—	—	limited internally
Output					
Output voltage	V_Q	-1	32	V	—
Output current	I_Q	—	—	—	limited internally
Ground					
Current	I_{GND}	50	—	mA	—
Temperatures					
Junction temperature	T_j	—	150	°C	—
Storage temperature	T_{stg}	-50	150	°C	—
Operating Range					
Input voltage	V_I	5.5	45	V	—
Junction temperature	T_j	-40	150	°C	—
Thermal Resistances					
Junction-ambient	$R_{\text{thj-a}}$	—	85	K/W	1)
Junction-pin4	$R_{\text{thj-pin4}}$	—	20	K/W	—

1) Worst case, regarding peak temperature; zero airflow; mounted on a PCB $80 \times 80 \times 1.5 \text{ mm}^3$, heat sink area 300 mm^2 .

Table 3 Characteristics
 $V_I = 13.5 \text{ V}; -40 \text{ }^{\circ}\text{C} \leq T_j \leq 125 \text{ }^{\circ}\text{C}$, unless specified otherwise

Parameter	Symbol	Limit Values			Unit	Test Conditions
		Min.	Typ.	Max.		
Output voltage	V_Q	4.9	5.0	5.1	V	$5 \text{ mA} \leq I_Q \leq 100 \text{ mA}$ $6 \text{ V} \leq V_I \leq 28 \text{ V}$
Output-current limiting	I_Q	120	160	–	mA	–
Current consumption $I_q = I_I - I_Q$	I_q	–	–	400	μA	$I_Q = 1 \text{ mA}$
Current consumption $I_q = I_I - I_Q$	I_q	–	9	15	mA	$I_Q = 100 \text{ mA}$
Drop voltage	V_{dr}	–	0.25	0.5	V	$I_Q = 100 \text{ mA}^{1)}$
Load regulation	ΔV_Q	–	–	40	mV	$I_Q = 5 \text{ to } 100 \text{ mA}$ $V_I = 6 \text{ V}$
Supply-voltage regulation	ΔV_Q	–	15	30	mV	$V_I = 6 \text{ to } 28 \text{ V}$ $I_Q = 5 \text{ mA}$
Power Supply ripple rejection	$PSRR$	–	54	–	dB	$f_r = 100 \text{ Hz}$ $V_r = 0.5 \text{ V}_{pp}$

1) Drop voltage = $V_I - V_Q$ (measured where V_Q has dropped 100 mV from the nominal value obtained at $V_I = 13.5 \text{ V}$).

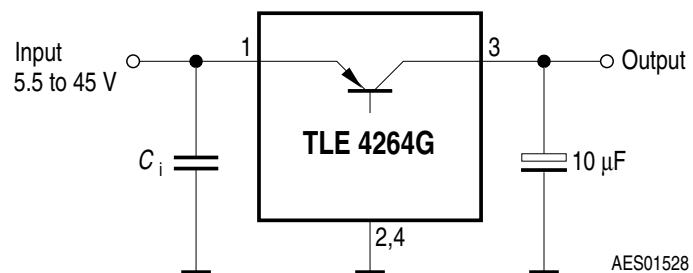
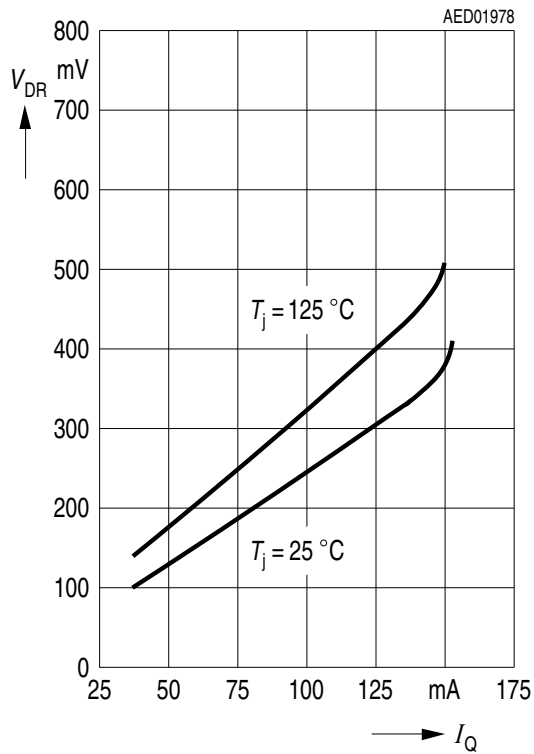
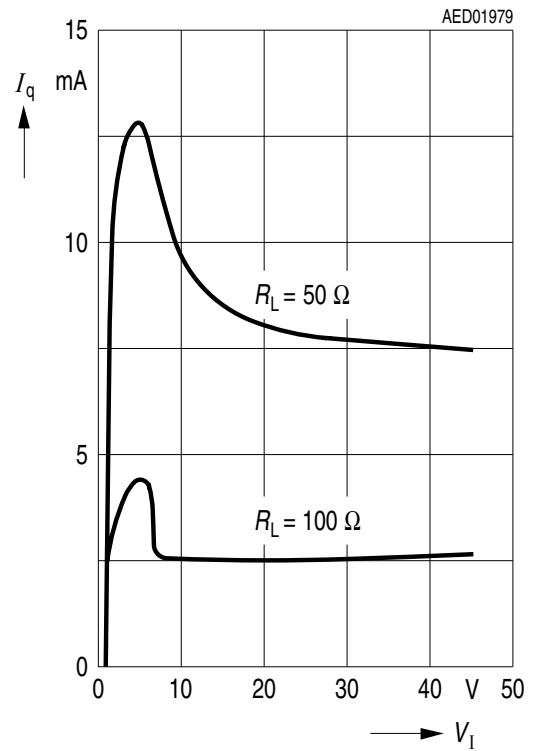


Figure 3 **Application Circuit**

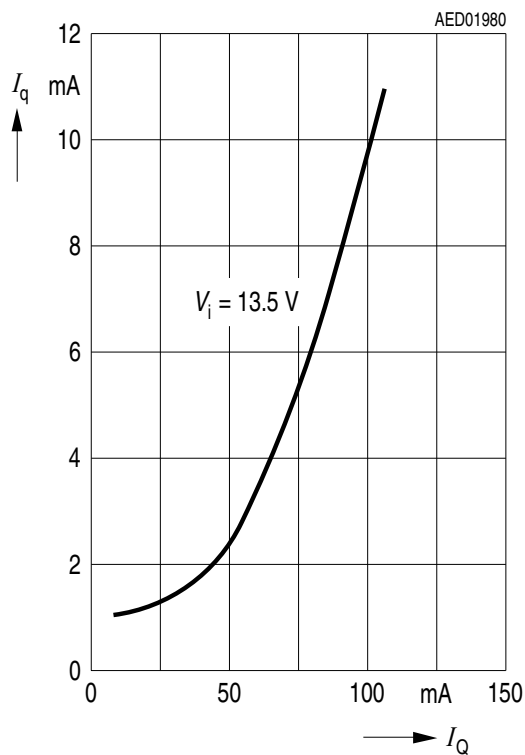
Drop Voltage V_{DR} versus Output Current I_Q



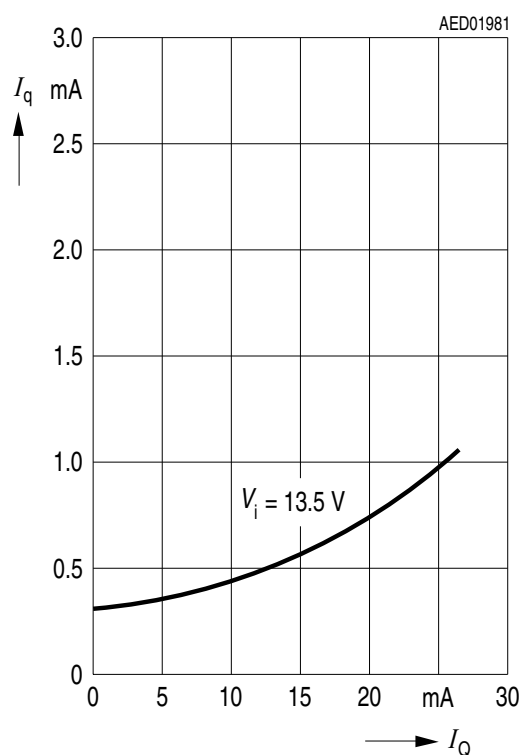
Current Consumption I_q versus Input Voltage V_i



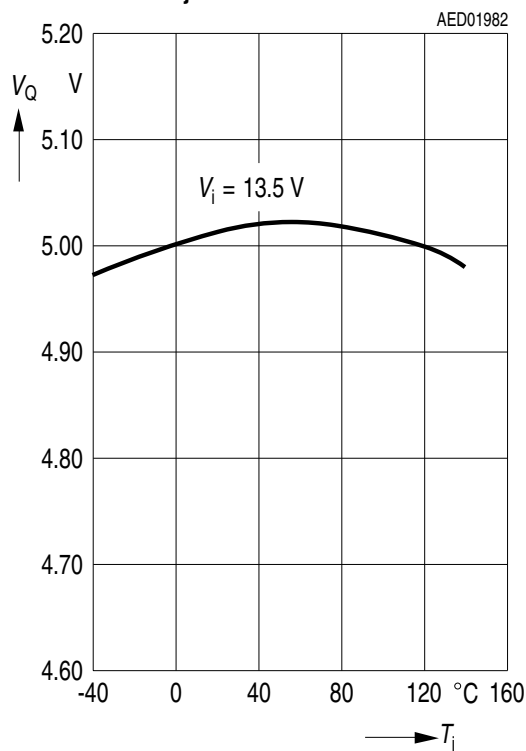
Current Consumption I_q versus Output Current I_Q



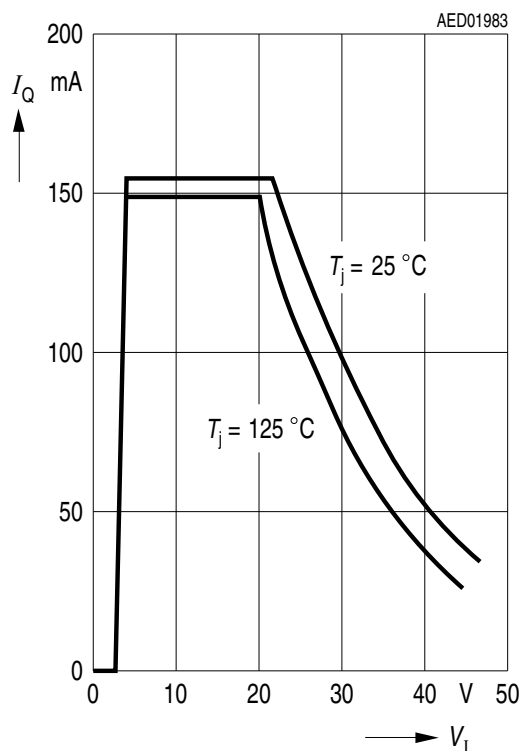
Current Consumption I_q versus Output Current I_Q



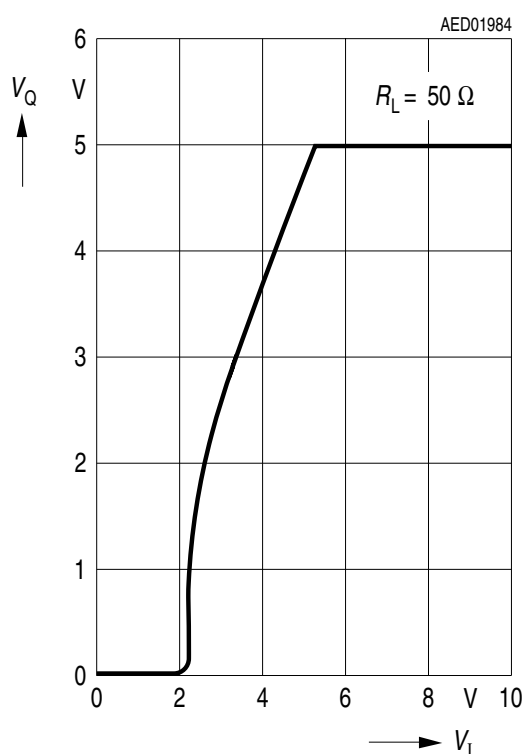
Output Voltage V_Q versus Temperature T_j



Output Current I_Q versus Input Voltage V_i



Output Voltage V_Q versus Input Voltage V_i



Package Outlines

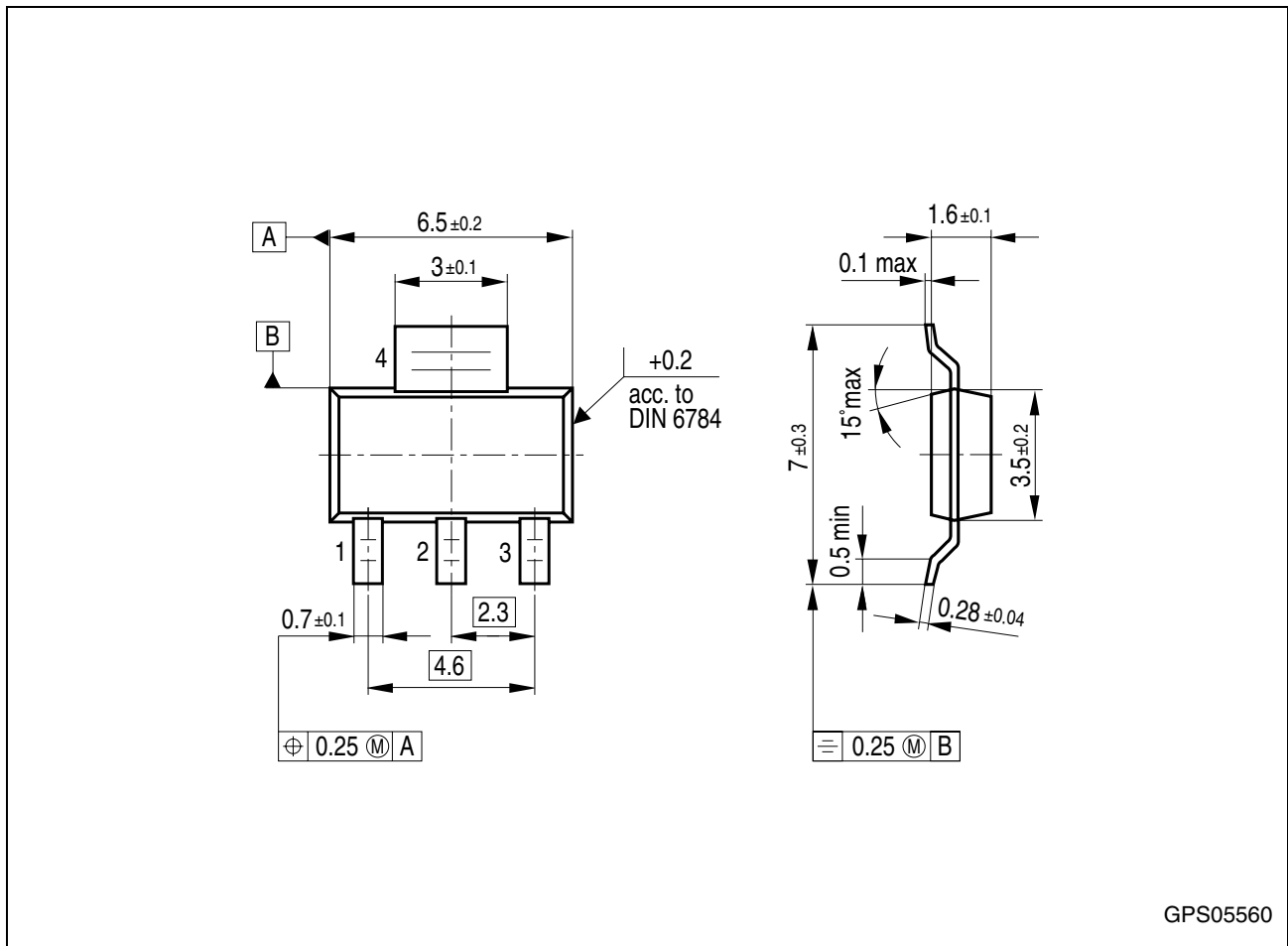


Figure 4 PG-SOT223-4 (Plastic Small Outline Transistor)

Green Product (RoHS compliant)

To meet the world-wide customer requirements for environmentally friendly products and to be compliant with government regulations the device is available as a green product. Green products are RoHS-Compliant (i.e Pb-free finish on leads and suitable for Pb-free soldering according to IPC/JEDEC J-STD-020).

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SMD = Surface Mounted Device

Dimensions in mm

Revision History

Version	Date	Changes
Rev. 2.3	2008-03-07	Simplified package name to PG-SOT223-4. No modification of released product.
Rev. 2.2	2007-03-20	Initial version of RoHS-compliant derivate of TLE 4264 Page 1 : AEC certified statement added Page 1 and Page 9 : RoHS compliance statement and Green product feature added Page 1 and Page 9 : Package changed to RoHS compliant version Legal Disclaimer updated

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