

### Description

The GM4275 series of fixed output, micro-power voltage regulators is designed for applications which require wide input voltage range up to 45V.

The GM4275 is an excellent choice for the use in automobile applications with the features of low quiescent current and low drop output voltage.

The GM4275 features the shutdown functions, such as over temperature protection for further power saving concerns.

A reset signal is generated for an output voltage VQ of typ.4.65 V. The delay time can be programmed by the external delay capacitor.

The GM4275 is in 5-Pin TO263 package. However, 5-Pin TO252 package is also available for better board area saving purpose.

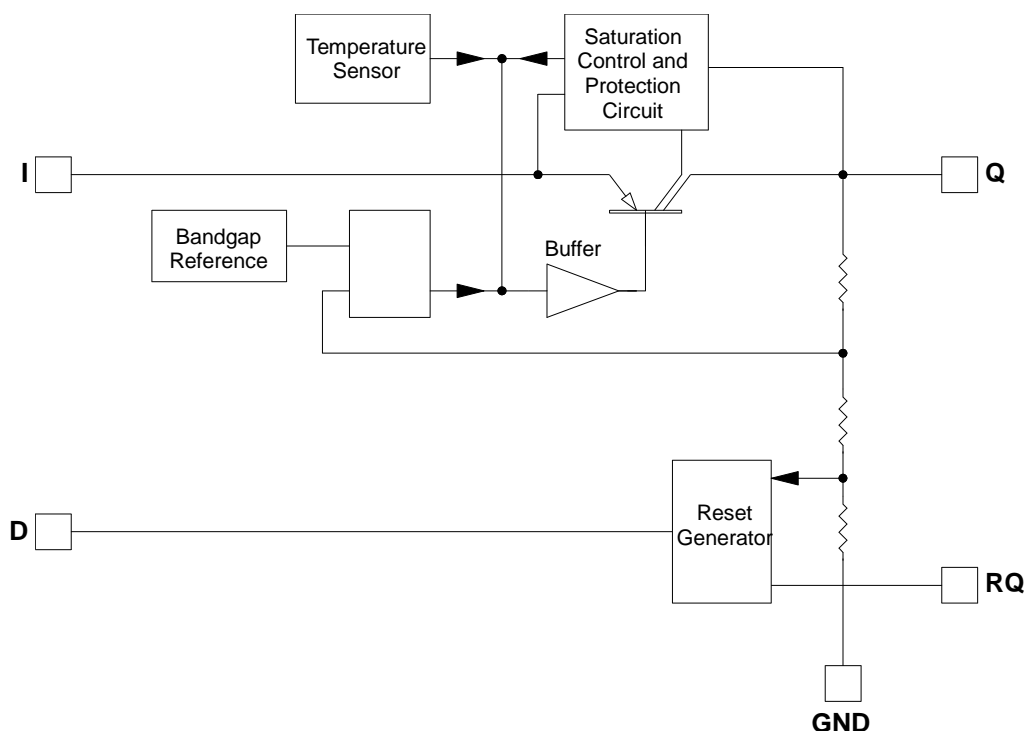
### Features

- **Output voltage: 5V±2%**
- **Very low current consumption**
- **Power on and under voltage reset**
- **Reset low down to VQ=1V**
- **Very low drop out voltage**
- **Short circuit protection**
- **Reverse polarity protection**
- **Suitable for automotive applications**

### Applications

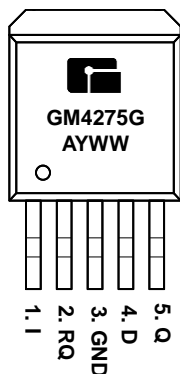
- **Automotive Electronics**
- **Switching Power Suppliers**

### Block Diagram

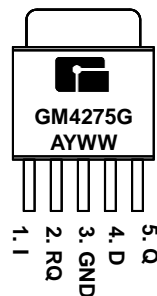


## Marking Information and Pin Configurations (Top View)

TO-263-5



TO-252-5



A: Assembly / Test site code  
Y: Year  
WW: Week

## Pin Descriptions

Pin Number	Pin Name	Pin Function
1	I	Input; block to ground directly at the IC with a ceramic capacitor.
2	RQ	Reset Output; open collector output
3	GND	Ground; internally connected to heat sink
4	D	Reset Delay; connected capacitor to GND for setting delay time
5	V <sub>OUT</sub>	Output; block to ground with a $\geq 22\mu\text{F}$ , ESR $< 5\Omega$ at 10kHz

## Ordering Information

Ordering Number	Package	Shipping
GM4275TA5RG	TO-263-5	800 Units / Reel
GM4275TC5RG	TO-252-5	2,500 Units/Reel

## Absolute Maximum Ratings

PARAMETER	SYMBOL	RATINGS		UNITS	Test Condition
		Min	Max		
Input Voltage	$V_I$	-42	45	V	-
Input Current	$I_I$	-	-	-	Internally Limited
Output Voltage	$V_Q$	-1.0	16	V	-
Output Current	$I_Q$	-	-	-	Internally Limited
Reset Output Voltage	$V_{RQ}$	-0.3	25	V	-
Reset Output Current	$I_{RQ}$	-5	5	mA	
Reset Delay Voltage	$V_D$	-0.3	7	V	
Reset Delay Current	$I_D$	-2	2	mA	
Junction Temperature	$T_J$	-	150	°C	
Storage Temperature	$T_{stg}$	-50	150	°C	

Note: Maximum ratings are absolute ratings, exceeding any one of these values may cause irreversible damage to the integrated circuit

## Recommended Operating Ratings

PARAMETER	SYMBOL	LIMITS		UNITS	Remark
		Min	Max		
Input Voltage	$V_I$	5.5	42	V	-
Junction Temperature	$T_J$	-40	150	°C	-

## Thermal Resistance

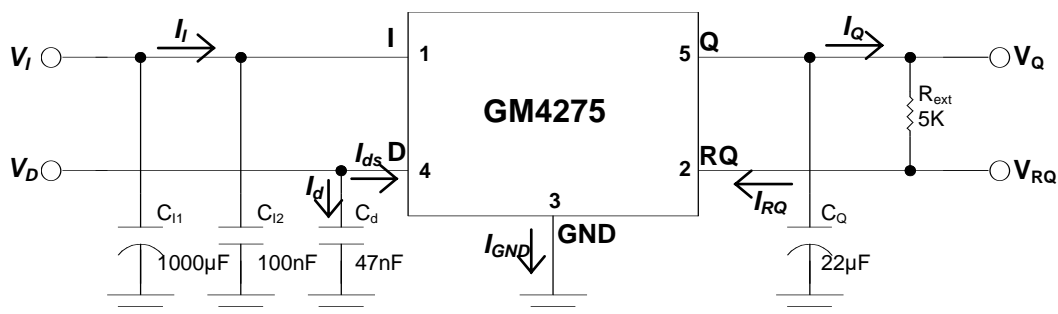
PARAMETER	SYMBOL	LIMITS		UNITS	Remark
		Min	Max		
Junction case	$\theta_{JC}$		2	°C/W	-
Junction Ambient	$\theta_{JA}$		50	°C /W	5L TO263
Junction Ambient	$\theta_{JA}$		70	°C /W	5L TO252

### Electrical Characteristics ( $T_J = -40^{\circ}\text{C}$ to $150^{\circ}\text{C}$ , $V_{IN}=13.5\text{V}$ , unless otherwise noted)

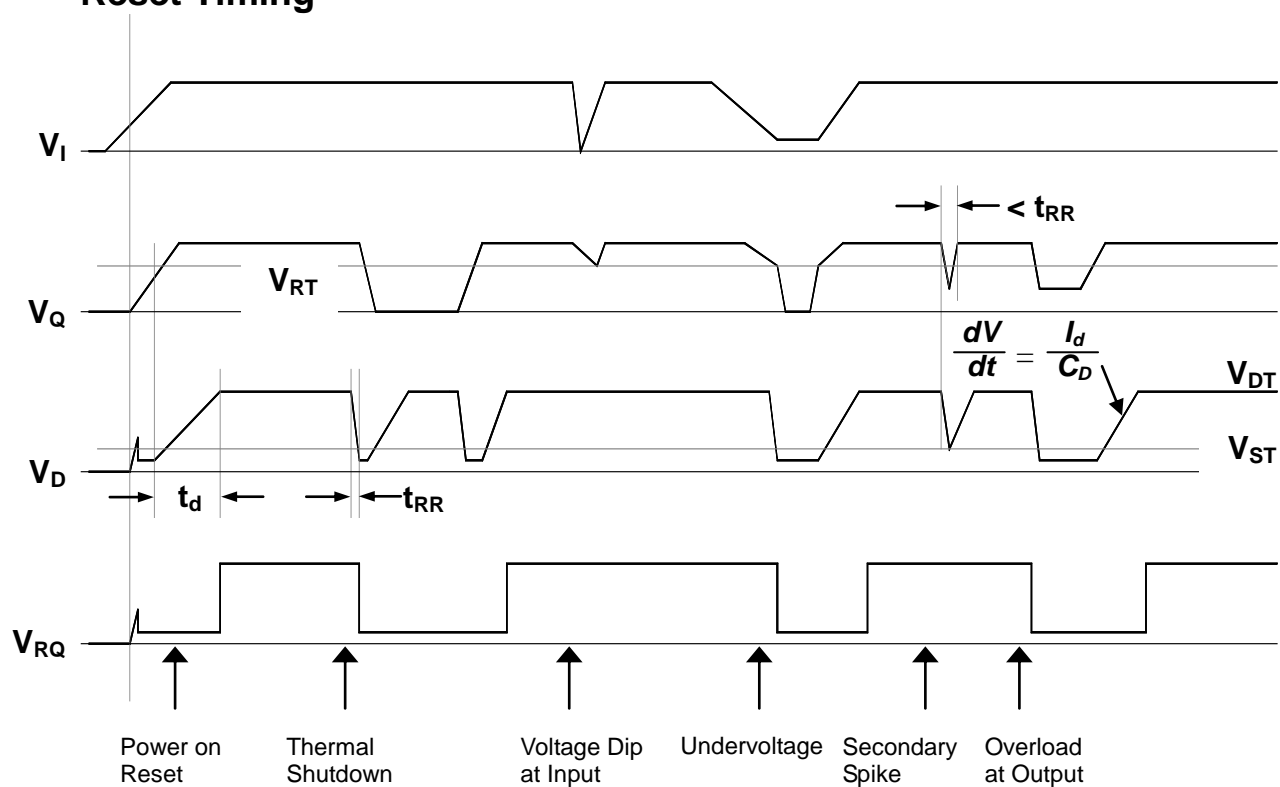
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Output</b>						
Output voltage	$V_Q$	$5\text{mA} < I_Q < 400\text{mA}$ $6\text{V} < V_I < 40\text{V}$	4.9	5.0	5.1	V
Output current limitation (Note 1)	$I_Q$	-	450	700	-	mA
Current Consumption; $I_q = I_I - I_Q$	$I_{q1}$	$I_Q = 1\text{mA}$ , $T_J = 25^{\circ}\text{C}$	-	150	200	$\mu\text{A}$
	$I_{q2}$	$I_Q = 1\text{mA}$ , $T_J = 85^{\circ}\text{C}$	-	150	220	$\mu\text{A}$
	$I_{q3}$	$I_Q = 250\text{mA}$	-	5	10	mA
	$I_{q4}$	$I_Q = 400\text{mA}$	-	12	22	mA
Dropout Voltage	$V_{dr}$	$I_Q = 300\text{mA}$ , $V_{dr} = V_I - V_Q$	-	250	500	mV
Line Regulation	$\Delta V_{Ql}$	$V_I = 8\text{V}$ to $32\text{V}$ , $I_Q = 5\text{mA}$	-	15	30	mV
Load Regulation	$\Delta V_{QL}$	$I_Q = 5\text{mA}$ to $400\text{mA}$	-15	5	15	mV
Power supply ripple rejection	PSRR	$f_r = 100\text{Hz}$ , $V_r = 0.5\text{V}_{PP}$	-	60	-	dB
Temperature output voltage drift	$dV_Q/dT$		-	0.5	-	mV/K
<b>Reset Timing D and Output RQ</b>						
Reset switching threshold	$V_{RT}$		4.5	4.65	4.8	V
Reset output low voltage	$V_{RQL}$	$R_{EXT} \geq 5\text{K}$ , $V_Q > 1\text{V}$	-	0.2	0.4	V
Reset output leakage current	$I_{RQH}$	$V_{RQH} > 4.5\text{V}$	-	0	2	$\mu\text{A}$
Reset charging current	$I_d$	$V_D = 1\text{V}$	3	6	9	$\mu\text{A}$
Upper timing threshold	$V_{DU}$	-	1.5	1.8	2.2	V
Lower timing threshold	$V_{DL}$	-	0.2	0.4	0.7	V
Reset Delay time	$t_d$	$C_D = 47\text{nF}$	10	16	22	ms
Reset reaction time	$t_{RR}$	$C_D = 47\text{nF}$	-	0.5	2	$\mu\text{s}$

Note 1. Measured when the output voltage  $V_Q$  has dropped 100mV from the nominal value obtained at  $V_I = 13.5\text{V}$

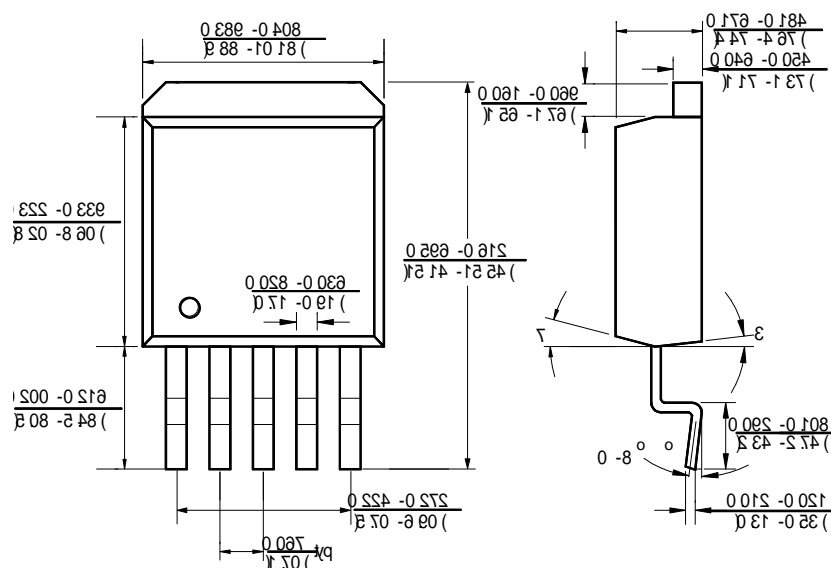
## Test Circuit



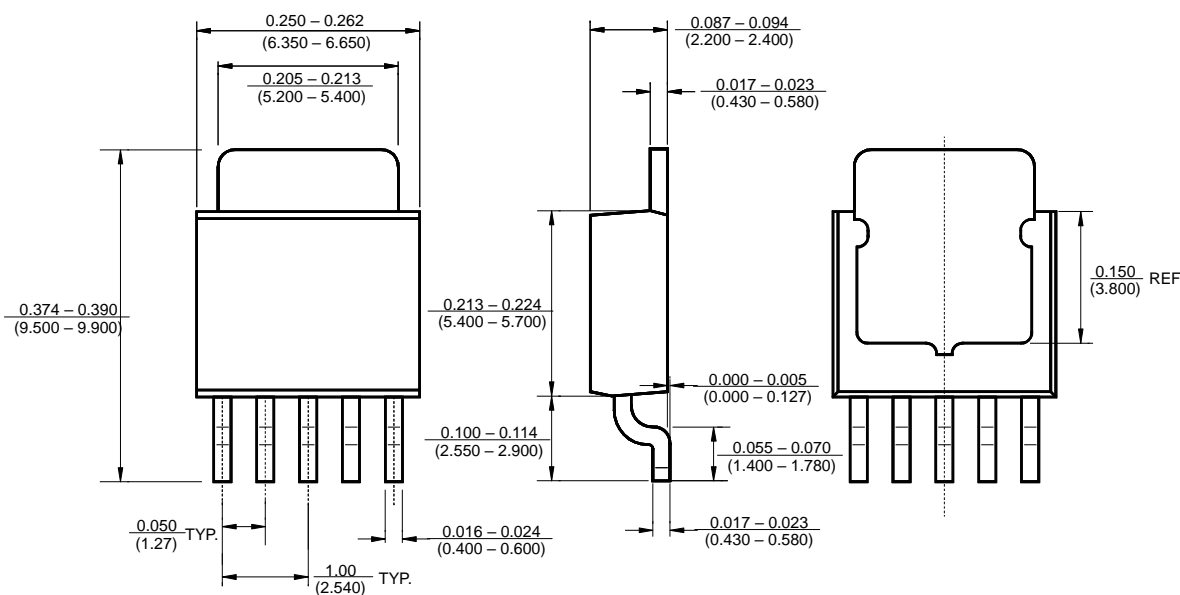
## Reset Timing



## Package Outline Dimensions – TO-263-5



## Package Outline Dimensions – TO-252-5





**GAMMA**  
MICROELECTRONICS

# GM4275

**WIDE INPUT RANGE  
5V LOW DROPOUT REGULATOR  
WITH RESET FLAG**

## Ordering Number

**GM 4275 TA5 R G**

APM Gamma  
Micro

Circuit Type

Package Type

Shipping Type

TA5: TO263-5  
TC5: TO252-5

T: Tube  
R: Tape & Reel

G: Green

Note:

### Green products:

- ◆ Lead-free (RoHS compliant)
- ◆ Halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight)