



# TJM4558

## WIDE BANDWIDTH DUAL BIPOLAR OPERATIONAL AMPLIFIERS

- INTERNALLY COMPENSATED
- SHORT-CIRCUIT PROTECTION
- GAIN AND PHASE MATCH BETWEEN AMPLIFIER
- LOW POWER CONSUMPTION
- PIN TO PIN COMPATIBLE WITH MC1458/LM358
- GAIN BANDWIDTH PRODUCT (at 100kHz) 5.5MHz

### DESCRIPTION

The TJM4558 is a high performance monolithic dual operational amplifier.

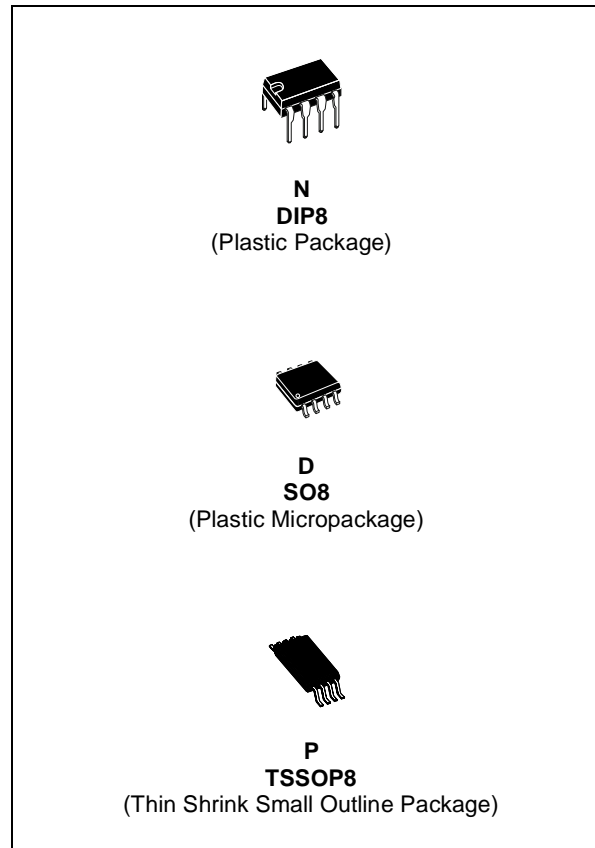
The circuit combines all the outstanding features of the MC1458 and, in addition possesses three times the unity gain bandwidth of the industry standard.

### ORDER CODE

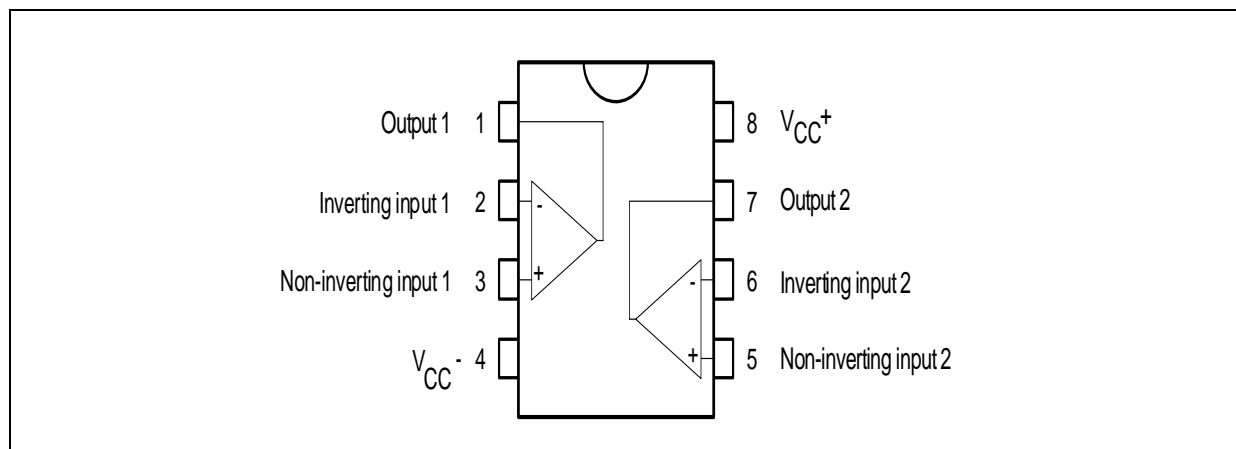
Part Number	Temperature Range	Package		
		N	D	P
TJM4558C	0°C, +70°C	•	•	•
TJM4558I	-40°C, +105°C	•	•	•

**Example :** TJM4558CN

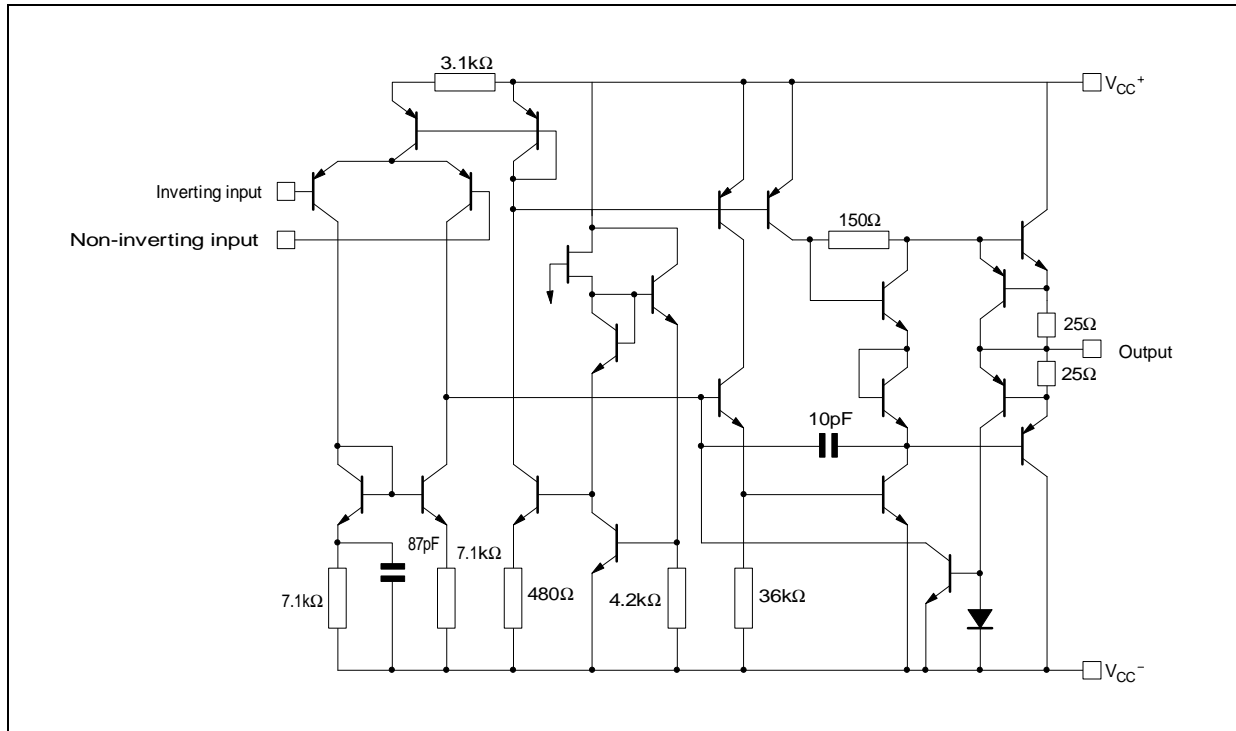
**N** = Dual in Line Package (DIP)  
**D** = Small Outline Package (SO) - also available in Tape & Reel (DT)  
**P** = Thin Shrink Small Outline Package (TSSOP) - only available in Tape & Reel (PT)



### PIN CONNECTIONS (top view)



**SCHEMATIC DIAGRAM (1/2 TJM4558)**



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	TJM4558I	TJM4558C	Unit
$V_{CC}$	Supply Voltage	±22		V
$V_i$	Input Voltage	±15		V
$V_{id}$	Differential Input Voltage	±30		V
$P_{tot}$	Power Dissipation	680		mW
	Output Short Circuit Duration	Infinite		
$T_{oper}$	Operating Free-Air Temperature Range	-40 to +105	0 to +70	°C
$T_{stg}$	Storage Temperature	-65 to +150		°C

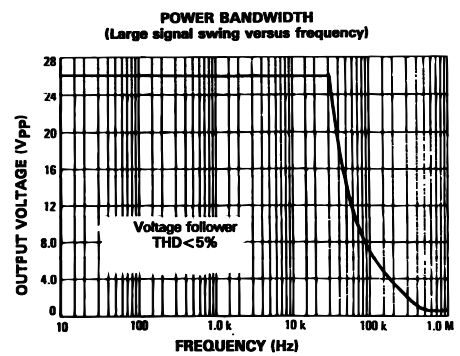
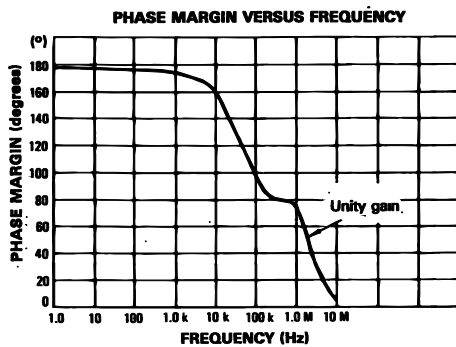
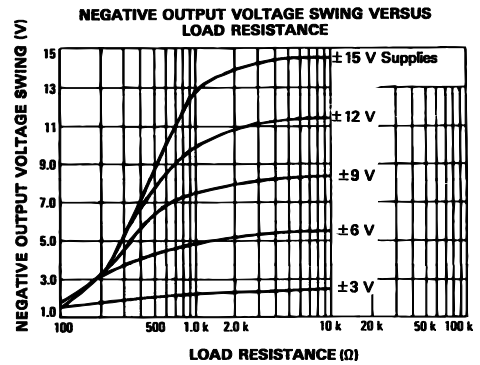
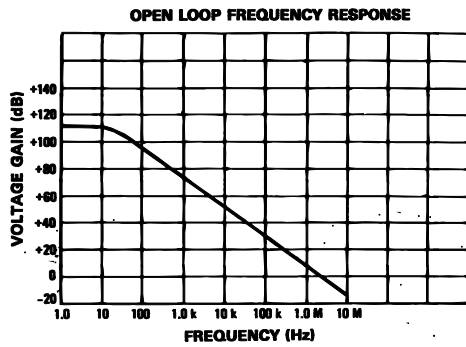
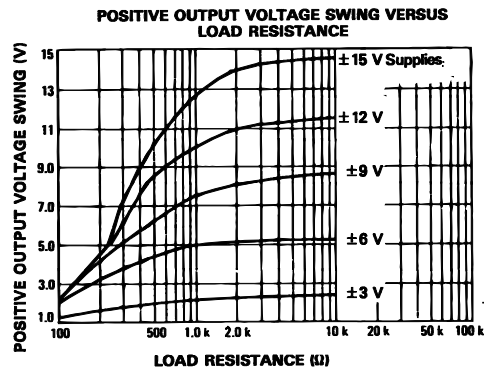
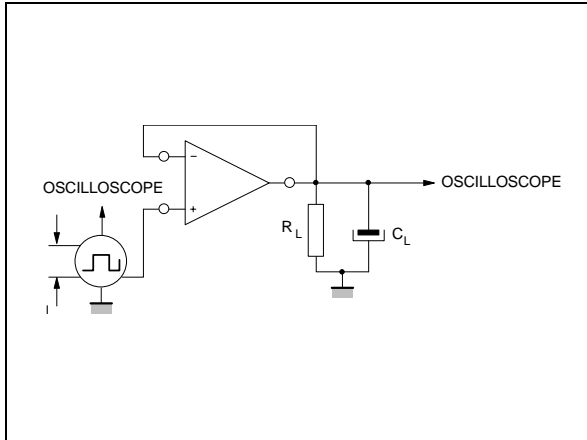
**ELECTRICAL CHARACTERISTICS**

$V_{CC} = \pm 15V$ ,  $T_{amb} = 25^\circ C$  (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{io}$	Input Offset Voltage ( $R_s \leq 10k\Omega$ ) $T_{amb} = +25^\circ C$ $T_{min} \leq T_{amb} \leq T_{max}$ .		1	5 6	mV
$I_{io}$	Input Offset Current $T_{amb} = +25^\circ C$ $T_{min} \leq T_{amb} \leq T_{max}$ .		20 40	100	nA
$I_{ib}$	Input Bias Current $T_{amb} = +25^\circ C$ $T_{min} \leq T_{amb} \leq T_{max}$ .		50 100	400	nA
$A_{vd}$	Large Signal Voltage Gain ( $R_L = 2k\Omega$ , $V_o = \pm 10V$ ) $T_{amb} = +25^\circ C$ $T_{min} \leq T_{amb} \leq T_{max}$ .	50 25	200		V/mV

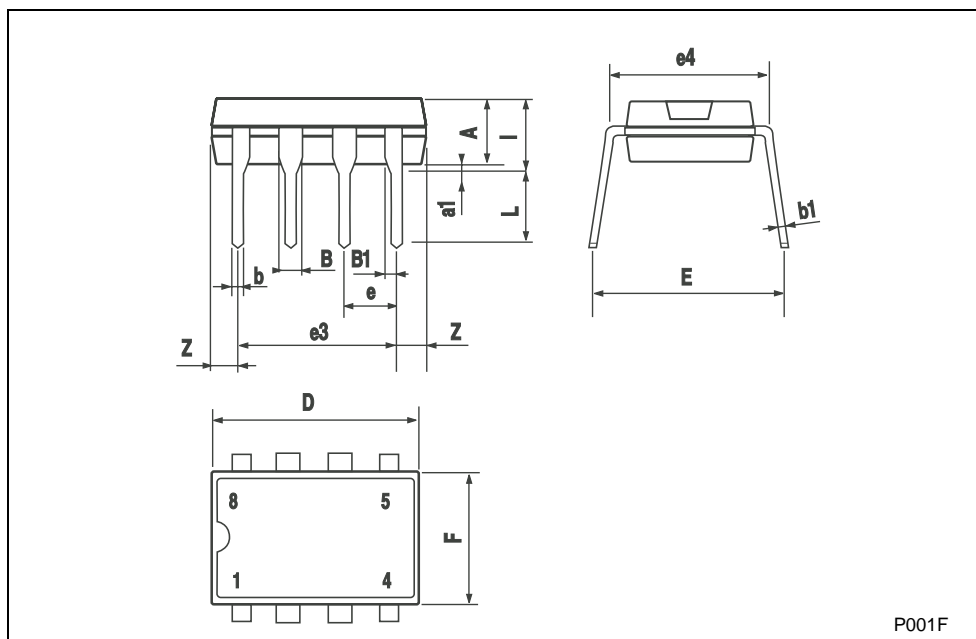
Symbol	Parameter	Min.	Typ.	Max.	Unit
SVR	Supply Voltage Rejection Ratio ( $R_S \leq 10k\Omega$ ) $T_{amb} = +25^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$ .		90 77		dB
$I_{CC}$	Supply Current, all amplifiers, no load $T_{amb} = +25^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$ .		2.3 4	4.5	mA
$V_{icm}$	Input Common Mode Voltage Range $T_{amb} = +25^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$ .	$\pm 12$ $\pm 12$			V
CMR	Common-mode Rejection Ratio ( $R_S \leq 10k\Omega$ ) $T_{amb} = +25^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$ .		90 70		dB
$I_{os}$	Output Short Circuit Current	10	20		mA
$V_o$	Output Voltage Swing $T_{amb} = +25^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$ .	$\pm 12$ $\pm 10$ $\pm 12$ $\pm 10$	$\pm 14$ $\pm 13$		V
SR	Slew Rate ( $V_i = \pm 10$ , $R_L = 2k\Omega$ , $C_L = 100\text{pF}$ , $T_{amb} = 25^\circ\text{C}$ , unity gain)		2.2		V/ $\mu\text{s}$
$t_r$	Rise Time ( $V_i = \pm 20\text{mV}$ , $R_L = 2k\Omega$ , $C_L = 100\text{pF}$ , $T_{amb} = 25^\circ\text{C}$ , unity gain)		0.3		$\mu\text{s}$
$K_{OV}$	Overshoot ( $V_i = \pm 20\text{mV}$ , $R_L = 2k\Omega$ , $C_L = 100\text{pF}$ , $T_{amb} = 25^\circ\text{C}$ , unity gain)		15		%
$R_i$	Input Resistance	0.3	2		M $\Omega$
$C_i$	Input Capacitance		1.4		pF
$R_o$	Output Resistance		75		$\Omega$
B	Unity Gain Bandwidth		2.8		MHz
GBP	Gain Bandwidth Product ( $V_i = 10\text{mV}$ , $R_L = 2k\Omega$ , $C_L = 100\text{pF}$ , $f = 100\text{kHz}$ , $T_{amb} = 25^\circ\text{C}$ )		5.5		MHz
THD	Total Harmonic Distortion ( $f = 1\text{kHz}$ , $A_v = 20\text{dB}$ , $R_L = 2k\Omega$ , $V_o = 2V_{pp}$ , $C_L = 100\text{pF}$ , $T_{amb} = 25^\circ\text{C}$ )		0.008		%
$e_n$	Equivalent Input Noise Voltage ( $R_S = 100\Omega$ , $f = 1\text{kHz}$ )		12		$\frac{nV}{\sqrt{\text{Hz}}}$
$V_{O1}/V_{O2}$	Channel Separation		120		dB

TRANSIENT RESPONSE TEST CIRCUIT



## PACKAGE MECHANICAL DATA

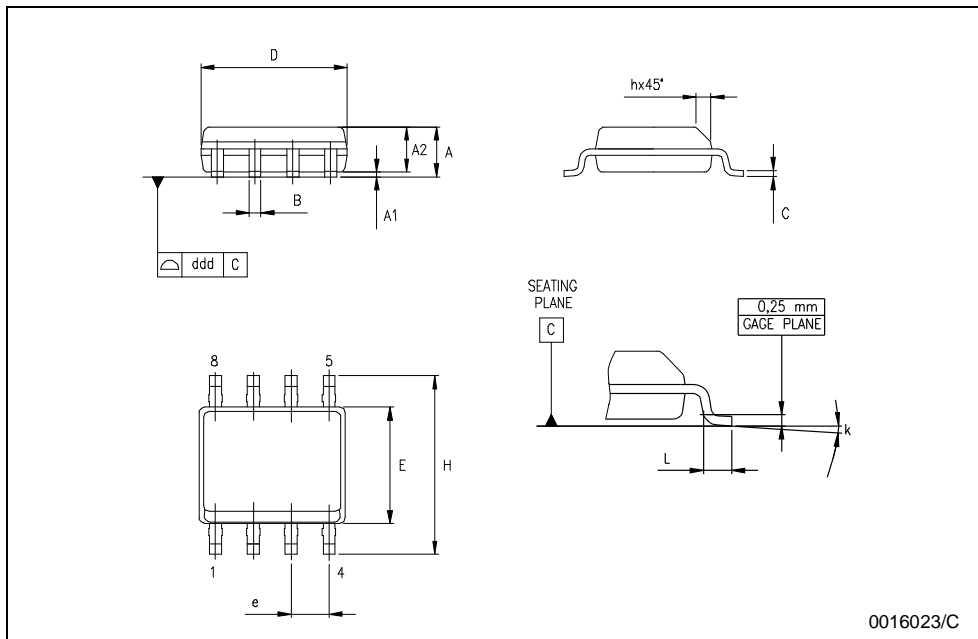
Plastic DIP-8 MECHANICAL DATA						
DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		3.3			0.130	
a1	0.7			0.028		
B	1.39		1.65	0.055		0.065
B1	0.91		1.04	0.036		0.041
b		0.5			0.020	
b1	0.38		0.5	0.015		0.020
D			9.8			0.386
E		8.8			0.346	
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			7.1			0.280
I			4.8			0.189
L		3.3			0.130	
Z	0.44		1.6	0.017		0.063



P001F

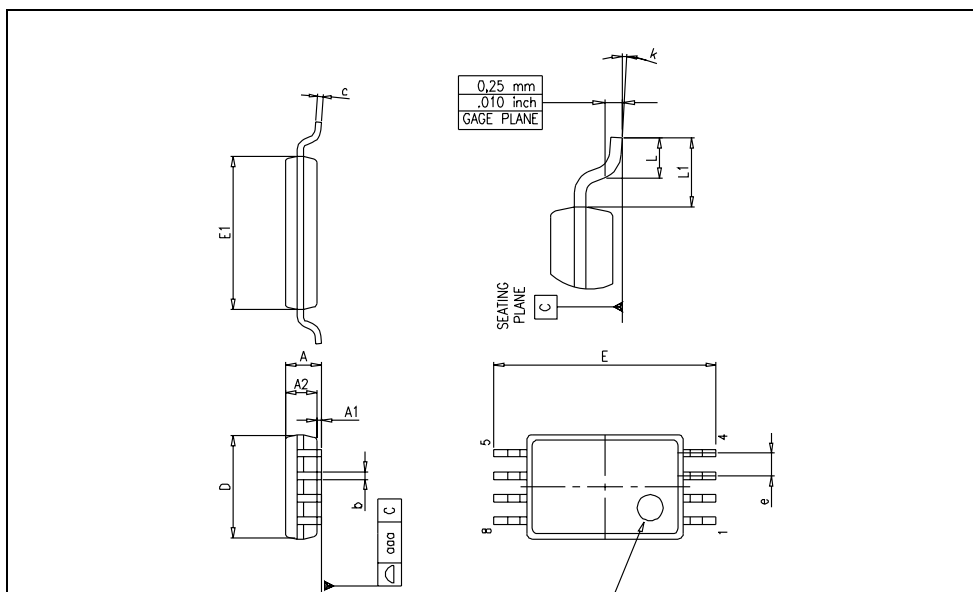
PACKAGE MECHANICAL DATA

SO-8 MECHANICAL DATA						
DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.35		1.75	0.053		0.069
A1	0.10		0.25	0.04		0.010
A2	1.10		1.65	0.043		0.065
B	0.33		0.51	0.013		0.020
C	0.19		0.25	0.007		0.010
D	4.80		5.00	0.189		0.197
E	3.80		4.00	0.150		0.157
e		1.27			0.050	
H	5.80		6.20	0.228		0.244
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
k	8° (max.)					
ddd			0.1			0.04



PACKAGE MECHANICAL DATA

TSSOP8 MECHANICAL DATA						
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			1.2			0.047
A1	0.05		0.15	0.002		0.006
A2	0.80	1.00	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.012
c	0.09		0.20	0.004		0.008
D	2.90	3.00	3.10	0.114	0.118	0.122
E	6.20	6.40	6.60	0.244	0.252	0.260
E1	4.30	4.40	4.50	0.169	0.173	0.177
e		0.65			0.0256	
K	0°		8°	0°		8°
L	0.45	0.60	0.75	0.018	0.024	0.030
L1		1			0.039	



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics  
 All other names are the property of their respective owners.

© 2003 STMicroelectronics - All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany  
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain  
 Sweden - Switzerland - United Kingdom - United States

<http://www.st.com>



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[TJM4558CD](#) [TJM4558CDT](#) [TJM4558CN](#)