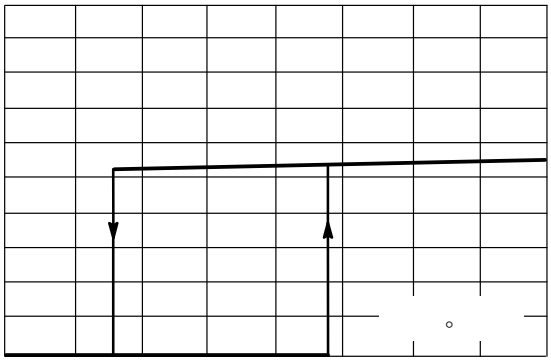
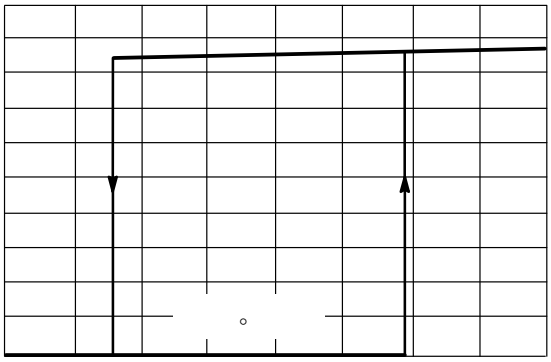
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power Input Supply Voltage	V_{in}	−1.0 to 12	V
$\overline{\text{Reset}}$ Output Voltage	V_O	−1.0 to 12	V
$\overline{\text{Reset}}$ Output Sink Current	I_{Sink}	Internally Limited	mA
Clamp Diode Forward Current, Reset to Input Pin (Note 1)	IF	100	mA
Power Dissipation and Thermal Characteristics			
P Suffix, Plastic Package			
Maximum Power Dissipation @ T_A = 25°C	P_D	700	mW
Thermal Resistance, Junction−to−Air	$R_{\theta JA}$	178	°C/W
D Suffix, Plastic Package			
Maximum Power Dissipation @ T_A = 25°C	P_D	700	mW
Thermal Resistance, Junction−to−Air	$R_{\theta JA}$	178	°C/W
DM Suffix, Plastic Package			
Maximum Power Dissipation @ T_A = 25°C	P_D	520	mW
Thermal Resistance, Junction−to−Air	$R_{\theta JA}$	240	°C/W
Operating Junction Temperature	T_J	+150	°C
Operating Ambient Temperature Range			
240			



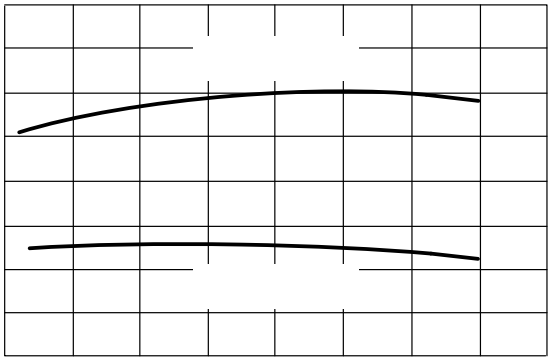
V_{in}, INPUT VOLTAGE (V)

Figure 4. MC3X164−3 $\overline{\text{Reset}}$ Output Voltage versus Input Voltage



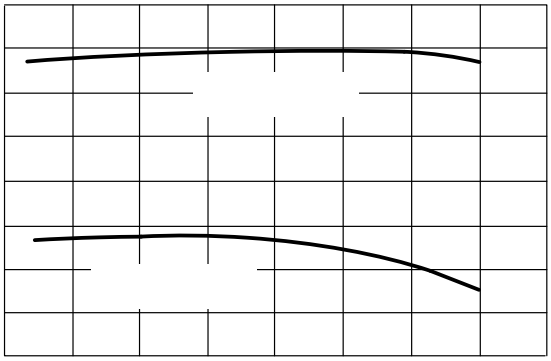
V_{in}, INPUT VOLTAGE (V)

Figure 5. MC3X164−5 $\overline{\text{Reset}}$ Output Voltage versus Input Voltage



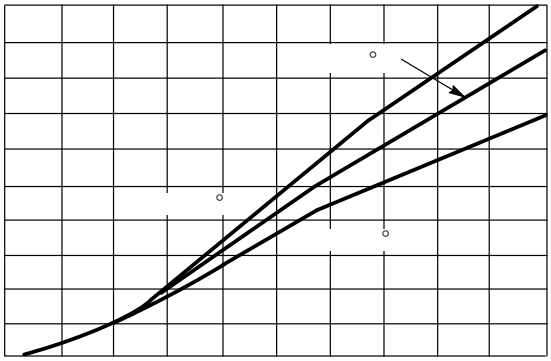
T_A, AMBIENT TEMPERATURE (°C)

Figure 6. MC3X164−3 Comparator Threshold Voltage versus Temperature



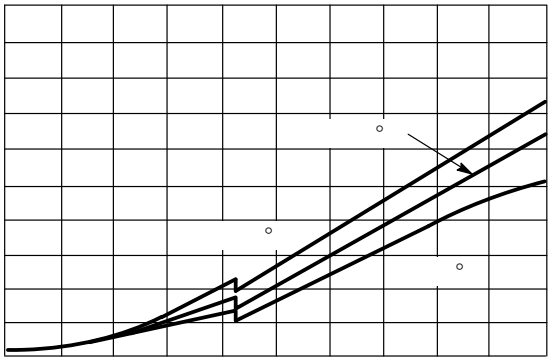
T_A, AMBIENT TEMPERATURE (°C)

Figure 7. MC3X164−5 Comparator Threshold Voltage versus Temperature



V_{in}, INPUT VOLTAGE (V)

Figure 8. MC3X164−3 Input Current versus Input Voltage



V_{in}, INPUT VOLTAGE (V)

Figure 9. MC3X164−5 Input Current versus Input Voltage

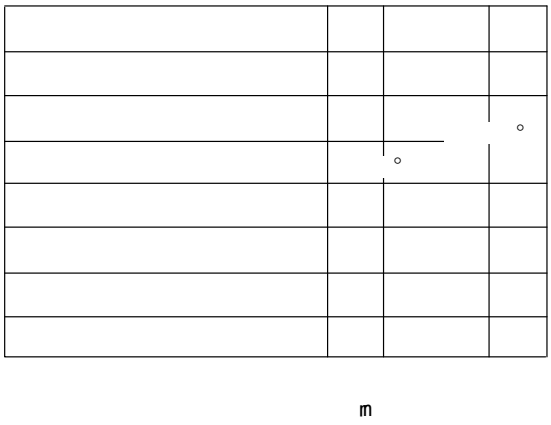


Figure 10. MC3X164−3 $\overline{\text{Reset}}$ Output Saturation versus Sink Current

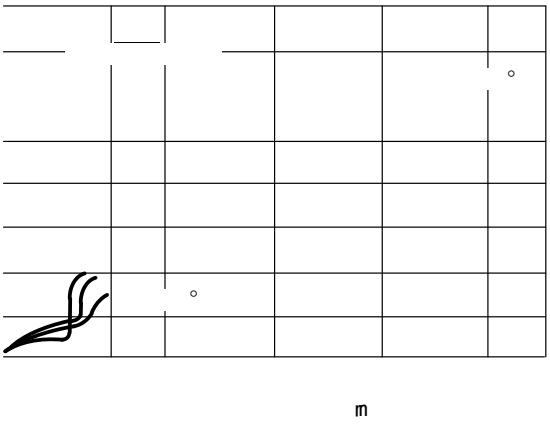


Figure 11. MC3X164−5 $\overline{\text{Reset}}$ Output Saturation versus Sink Current

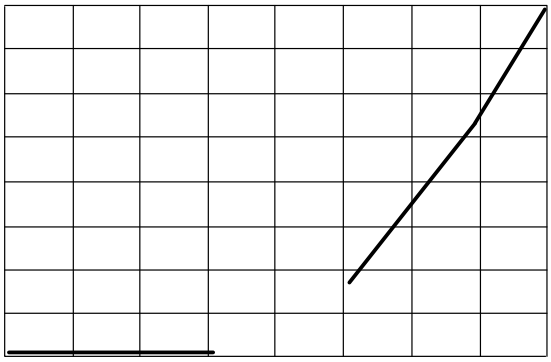


Figure 12. Clamp Diode Forward Current versus Voltage

Figure 13. $\overline{\text{Reset}}$ Delay Time (MC3X164−5 Shown)

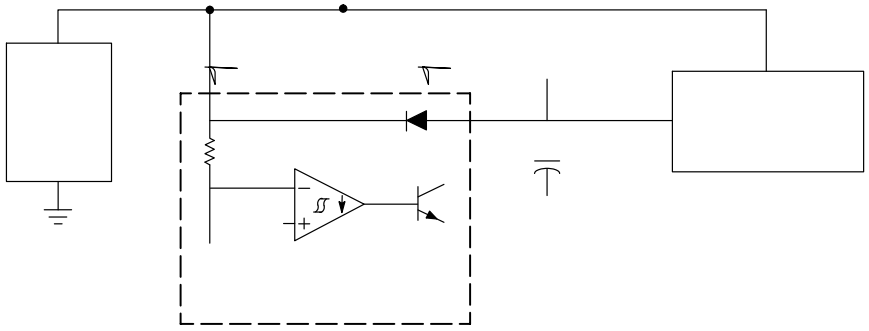
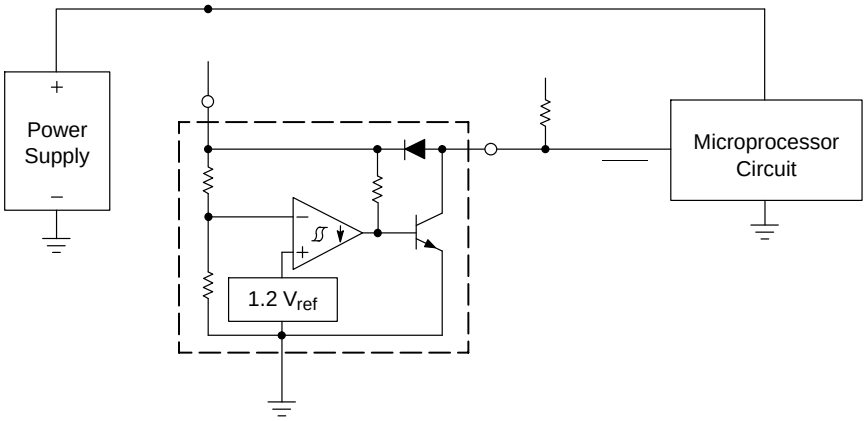


Figure 14. Low Voltage Microprocessor Reset



m

Figure 15. Low Voltage Microprocessor Reset With Additional Hysteresis (MC3X164−5 Shown)

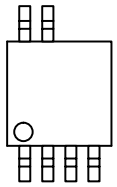
ORDERING INFORMATION

Device	Package	Shipping†
MC33164D−3G	SOIC−8 (Pb−Free)	98 Units / Rail
MC33164D−3R2G	SOIC−8 (Pb−Free)	2500 Units / Tape & Reel
NCV33164D−3R2G*	SOIC−8 (Pb−Free)	
MC33164DM−3R2G	Micro8 (Pb−Free)	4000 Units / Tape & Reel
MC33164P−3G	TO−92 (Pb−Free)	2000 Units / Box
MC33164P−3RAG	TO−92 (Pb−Free)	2000 Units / Tape & Reel
MC33164P−3RPG	TO−92 (Pb−Free)	2000 Units / Pack
MC33164D−5G	SOIC−8 (Pb−Free)	98 Units / Rail
MC33164D−5R2G	SOIC−8 (Pb−Free)	2500 Units / Tape & Reel
NCV33164D−5R2G*	SOIC−8 (Pb−Free)	
MC33164DM−5R2G		

PIN CONNECTIONS AND MARKING DIAGRAMS

SOIC−8
D SUFFIX
CASE 751

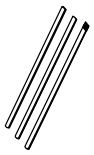
Micro8
MC33164DM
CASE 846A



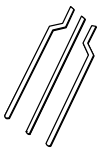
SRC	= Device Code
x	= Device Number 3 or 4
y	= Suffix Number 3 or 5
A	= Assembly Location
L	= Wafer Lot
Y	= Year
W	= Work Week
▪	= Pb−Free

TO−92 (TO−226) 1 WATT

SCALE 1:1

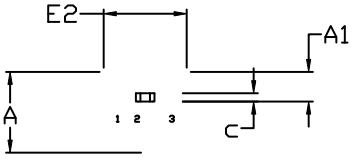


STRAIGHT LEAD

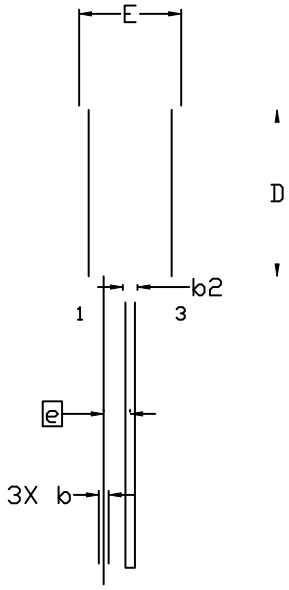


BENT LEAD

STRAIGHT LEAD



END VIEW



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR GATE PROTRUSIONS. T EXCEED 0.20. DIMENSION b2 LOCATED

ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	3.75	3.90	4.05
A1	1.28	1.43	1.58
b	0.38	0.465	0.55
b2	0.62	0.70	0.78
c	0.37		
D			
E			
E2			
e	1.27 BSC		

STYLES AND MARKING ON PAGE 3

TO−92 (TO−

STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 6:
PIN 1. GATE
2. SOURCE & SUBSTRATE
3. DRAIN

STYLE 7:
PIN 1. SOURCE
2. DRAIN
3. GATE

STYLE 8:
PIN 1. DRAIN
2. GATE
3. SOURCE & SUBSTRATE

STYLE 11:
PIN 1. ANODE
2. CATHODE & ANODE
3. CATHODE

STYLE 12:
PIN 1. MAIN TERMINAL 1
2. GATE
3. MAIN TERMINAL 2

STYLE 13:
PIN 1. ANODE 1
2. GATE
3. CATHODE 2

STYLE 16:
PIN 1. ANODE
2. GATE
3. CATHODE

STYLE 17:
PIN 1. COLLECTOR
2. BASE
3. EMITTER

STYLE 18:
PIN 1. ANODE
2. CATHODE

STYLE 21:
PIN 1. COLLECTOR
2. EMITTER
3. BASE

STYLE 22:
PIN 1. SOURCE
2. GATE
3. DRAIN

STYLE 26:
PIN 1. V_{CC}
2. GROUND 2
3. OUTPUT

STYLE 27:
PIN 1. MT
2. SUBSTRATE
3. MT

STYLE 31:
PIN 1. GATE
2. DRAIN
3. SOURCE

STYLE 32:
PIN 1. BASE
2. COLLECTOR
3. EMITTER

–X–

– – –

⊕	0.	(0.010) Ⓜ	Ⓜ

–Y–

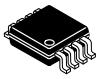
– – –

G

–Z–

C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0	8	0	8
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

0. (0.010) Ⓜ 1 0 1 1 0 0 1 . 0 0 0 0 . 1 1 0 1 1 . 1 0 . 0 0 0 1 . 1 1 0 0 1 1 0 ( ) 0 1 . 1 1 0 0 1 1 . 1 1 . 1 0 0 . 0 0 0 . 1 1 . 1 0 0 . 0 0 . 0 1 1 . 1 0 0 . 0 1 0 0 0 .)



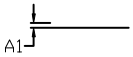
SCALE 2:1

Micro8
CASE 846A−02
ISSUE K

DATE 16 JUL 2020

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.10 mm IN EXCESS OF



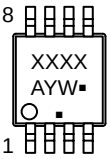
NSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSION

⌓|0.038 (0.0015)|

DIM	MILLIMETER		
	MIN.	NOM.	
A	---	---	
A1	0.05	0.08	
c	0.13	0.18	
E			

RECOMMENDED
MOUNTING FOOTPRINT

GENERIC
MARKING DIAGRAM*



XXXX = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. SOURCE
2. SOURCE
3. SOURCE
4. GATE
5. DRAIN
6. DRAIN
7. DRAIN
8. DRAIN

STYLE 2:
PIN 1. SOURCE 1
2. GATE 1
3. SOURCE 2
4. GATE 2
5. DRAIN 2
6. DRAIN 2
7. DRAIN 1
8. DRAIN 1

STYLE 3:
PIN 1. N-SOURCE
2. N-GATE
3. P-SOURCE
4. P-GATE
5. P-DRAIN
6. P-DRAIN
7. N-DRAIN
8. N-DRAIN