



MILITARY DATA SHEET

MN54F545-X REV 1A0

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OCTAL BIDIRECTIONAL TRANSCEIVER WITH TRI-STATE OUTPUTS

General Description

The F545 is an 8-bit, TRI-STATE, high-speed transceiver. It provides bidirectional drive for bus-oriented microprocessor and digital communications systems. Straight through bidirectional transceivers are featured, with 24 mA (20 mA Mil) bus drive capability on the A ports and 64 mA (48 mA Mil) bus drive capability on the B ports.

One input, Transmit/Receive (T/R) determines the direction of logic signals through the bidirectional transceiver. Transmit enables data from A ports to B ports; Receive enables data from B ports to A ports. The Output Enable input disables both A and B ports by placing them in a TRI-STATE condition.

Industry Part Number

54F545

NS Part Numbers

54F545DMQB
 54F545FMQB
 54F545LMQB

Prime Die

M545

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (°C)
1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55

Features

- Higher Drive Than 8304
- 8-Bit Bidirectional Data Flow Reduces System Package Count
- 3-State input/outputs for interfacing with Bus-Oriented Systems
- 20 mA and 48 mA Bus Drive Capability on A and B Ports, Respectively
- Transmit/Receive and Output Enable Simplify Control Logic

(Absolute Maximum Ratings)

(Note 1)

Storage Temperature	-65 C to +150 C
Ambient Temperature under Bias	-55 C to +125 C
Junction Temperature under Bias	-55 C to +175 C
Vcc Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-30mA to +5.0mA
Voltage Applied to Output in HIGH State (with Vcc=0V)	
Standard Output	-0.5V to Vcc
TRI-STATE Output	-0.5V to +5.5V
Current Applied to Output in LOW State (Max)	twice the rated Iol(mA)
ESD Last Passing Voltage (Min)	4000V

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

Free Air Ambient Temperature	
Commercial	0 C to +70 C
Military	-55 C to +125 C
Supply Voltage	
Military	+4.5V to +5.5V
Commercial	+4.5V to +5.5V

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: VCC 4.5V to 5.5V, Temp range: -55C to 125C

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
IIH	Input High Current	VCC=5.5V, VM=2.7V, VINH=5.5V	1, 3	INPUTS		20	uA	1, 2, 3
IBVI	Input HIGH Current	VCC=5.5V, VM=7.0V, VINH=5.5V	1, 3	\overline{OE} , T/ \overline{R}		100	uA	1, 2, 3
IBVIT	Input HIGH Current	VCC=5.5V, VM=5.5V, VINH=5.5V, VINL=0.0V	1, 3	An, Bn		1.0	mA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VM=0.5V	1, 3	\overline{OE} , T/ \overline{R}		-1.2	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, VIL=0.8V, IOL=20mA	1, 3	OUTPUTS An		0.5	V	1, 2, 3
VOLB	Output LOW Voltage	VCC=4.5V, VIL=0.8V, VIH=2.0V, IOLB=48mA	1, 3	OUTPUTS Bn		0.55	V	1, 2, 3
VOH	Output HIGH Voltage	VCC=4.5V, VIL=0.8V, IOH=-1.0mA, VIH=2.0V	1, 3	OUTPUTS An	2.5		V	1, 2, 3
VOH3	Output HIGH Voltage	VCC=4.5V, VIL=0.8V, IOH3=-3.0mA, VIH=2.0V	1, 3	OUTPUTS An	2.4		V	1, 2, 3
VOHB	Output HIGH Voltage	VCC=4.5V, VIL=0.8V, IOHB=-12mA, VIH=2.0V, VINH=5.5V	1, 3	OUTPUTS Bn	2.0		V	1, 2, 3
IOS	Short-Circuit Current	VCC=5.5V, VM=0.0V, VINL=0.0V, VINH=5.5V	1, 3	An	-60	-150	mA	1, 2, 3
IOSB	Output Short-Circuit Current	VCC=5.5V, VM=0.0V, VINH=5.5V, VINL=0.0V	1, 3	Bn	-100	-225	mA	1, 2, 3
VCD	Input Clamp Diode Voltage	VCC=4.5V, IM=-18mA, VINH=5.5V	1, 3	\overline{OE} , T/ \overline{R}		-1.2	V	1, 2, 3
ICCH	Supply Current	VCC=5.5V, VINH=5.5V, VINL=0.0V	1, 3	VCC		90	mA	1, 2, 3
ICCL	Supply Current	VCC=5.5V, VINH=5.5V, VINL=0.0V	1, 3	VCC		120	mA	1, 2, 3
ICCZ	Supply Current	VCC=5.5V, VINH=5.5V, VINL=0.0V	1, 3	VCC		110	mA	1, 2, 3
ICEX	Output HIGH Leakage Current	VCC=5.5V, VINH=5.5V, VINL=0.0V, VM=5.5V	1, 3	OUTPUTS		250	uA	1, 2, 3
IOZHT	Output Leakage Current	VCC=5.5V, VM=2.7V, VIH=2.0V, VINH=5.5V, VINL=0.0V	1, 3	OUTPUTS An, Bn		70	uA	1, 2, 3
IOZLT	Output Leakage Current	VCC=5.5V, VM=0.5V, VIH=2.0V, VINL=0.0V, VINH=5.5V	1, 3	OUTPUTS An, Bn		-650	uA	1, 2, 3

Electrical Characteristics

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
 AC: CL=50pf, RL=500 OHMS, TR=2.5ns, TF=2.5ns SEE AC FIGS

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLH	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	An/Bn or Bn/An	2.5	6.0	ns	9
			2, 4	An/Bn or Bn/An	2.0	7.5	ns	10, 11
tpHL	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	An/Bn or Bn/An	2.5	6.0	ns	9
			2, 4	An/Bn or Bn/An	2.0	7.5	ns	10, 11
tpZH	Output Enable	VCC=5.0V @25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	OUTPUT ENABLE	3.0	7.0	ns	9
			2, 4	OUTPUT ENABLE	2.5	9.0	ns	10, 11
tpZL	Output Enable	VCC=5.0V @25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	OUTPUT ENABLE	3.5	8.0	ns	9
			2, 4	OUTPUT ENABLE	3.0	10.0	ns	10, 11
tpHZ	Output Disable	VCC=5.0V @25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	OUTPUT DISABLE	2.0	6.5	ns	9
			2, 4	OUTPUT DISABLE	2.0	9.0	ns	10, 11
tpLZ	Output Disable	VCC=5.0V @25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	OUTPUT DISABLE	2.0	6.5	ns	9
			2, 4	OUTPUT DISABLE	2.0	10.0	ns	10, 11

- Note 1: Screen tested 100% on each device at -55 C, +25 C & +125 C temperature, Subgroups A1, 2, 3, 7 & 8.
- Note 2: Screen tested 100% on each device at +25 C temperature only, Subgroup A9.
- Note 3: Sample tested (Method 5005, Table 1) on each MFG. lot at +25 C, +125 C & -55 C temp., Subgroups A1, 2, 3, 7 & 8.
- Note 4: Sample Tested (Method 5005, Table 1) on each MFG. lot at +25 C Subgroup A9, & periodically at +125 C & -55 C temp., Subgroups 10 & 11.