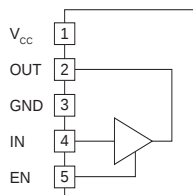


1. Specifications	3
1.1 Lead Configurations	3
1.2 Lead Definitions	3
1.3 Absolute Maximum Ratings	3
1.4 Recommended Operating Conditions	4
1.5 Electrical Characteristics: $T_A = 25^{\circ}\text{C}$	4
1.6 Electrical Characteristics: $T_A = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$	5
1.7 Thermal Characteristics	5
2. Functional Description	6
2.1 IXDD630 Block Diagram & Truth Table	6
2.2 IXDI630 Block Diagram & Truth Table	6
2.3 IXDN630 Block Diagram & Truth Table	6
3. Typical Performance Characteristics	7
4. Manufacturing Information	10
4.1 Moisture Sensitivity	10
4.2 ESD Sensitivity	10
4.3 Reflow Profile	10
4.4 Board Wash	10
4.5 Mechanical Dimensions	11

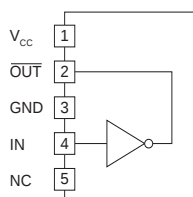
1 Specifications

1.1 Lead Configurations

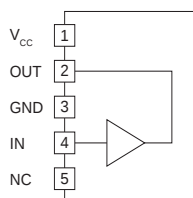
IXDD630 CI / YI



IXDI630 CI / YI



IXDN630 CI / YI



1.2 Lead Definitions

Lead Name	Description
IN	Logic Input
EN	Output Enable - Drive lead low to disable output, and force output to a high impedance state
OUT	Output - Sources or sinks current to turn-on or turn-off a discrete MOSFET or IGBT
$\overline{\text{OUT}}$	Inverted Output - Sources or sinks current to turn-on or turn-off a discrete MOSFET or IGBT
V_{CC}	Supply Voltage - Provides power to the device
GND	Ground - Common ground reference for the device
NC	Not connected

1.3 Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Supply Voltage	V_{CC}	-0.3	40	V
Input Voltage Range	V_{IN}, V_{EN}	-5	$V_{CC}+0.3$	V
Output Current	I_{OUT}	-	± 30	A
Junction Temperature	T_J	-55	+150	°C
Storage Temperature	T_{STG}	-65	+150	°C

Unless stated otherwise, absolute maximum electrical ratings are at 25°C

Absolute maximum ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

1.4 Recommended Operating Conditions

Parameter	Symbol	Range	Units
Supply Voltage	V_{CC}	UVLO to 35	V
Operating Temperature Range	T_A	-40 to +125	°C

1.5 Electrical Characteristics: $T_A = 25^\circ\text{C}$

Test Conditions: $\text{UVLO} \leq V_{CC} \leq 35\text{V}$ (unless otherwise noted).

Parameter	Conditions	Symbol	Minimum	Typical	Maximum	Units
Input Voltage, High	$\text{UVLO} \leq V_{CC} \leq 18\text{V}$	V_{IH}	3.5	-	-	V
Input Voltage, Low	$\text{UVLO} \leq V_{CC} \leq 18\text{V}$	V_{IL}	-	-	0.8	
Input Current	$0\text{V} \leq V_{IN} \leq V_{CC}$	I_{IN}	-	-	± 10	μA
EN Input Voltage, High	IXDD630 only	V_{ENH}	$2/3V_{CC}$	-	-	V
EN Input Voltage, Low	IXDD630 only	V_{ENL}	-	-	$1/3V_{CC}$	
Output Voltage, High	-	V_{OH}	$V_{CC}-0.025$	-	-	V
Output Voltage, Low	-	V_{OL}	-	-	0.025	
Output Resistance, High State	$V_{CC}=18\text{V}, I_{OUT}=-100\text{mA}$	R_{OH}	-	0.17	0.4	Ω
Output Resistance, Low State	$V_{CC}=18\text{V}, I_{OUT}=100\text{mA}$	R_{OL}	-	0.16	0.3	
Output Current, Continuous	Limited by package power dissipation	I_{DC}	-	-	± 8	A
Rise Time	$C_{LOAD}=5.6\text{nF}, V_{CC}=18\text{V}$	t_r	-	11	20	ns
Fall Time	$C_{LOAD}=5.6\text{nF}, V_{CC}=18\text{V}$	t_f	-	11	18	
On-Time Propagation Delay	$C_{LOAD}=5.6\text{nF}, V_{CC}=18\text{V}$	t_{ondly}	-	46	65	
Off-Time Propagation Delay	$C_{LOAD}=5.6\text{nF}, V_{CC}=18\text{V}$	t_{offdly}	-	46	65	
Output Enable Time	IXDD630 only	t_{PZL}, t_{PZH}	-	34	65	
Output Disable Time	IXDD630 only	t_{PLZ}, t_{PHZ}	-	65	125	
Enable Pull-Up Resistor	IXDD630 only	R_{EN}	-	400	-	$k\Omega$
Power Supply Current	$V_{CC}=18\text{V}, V_{IN}=3.5\text{V}$	I_{CC}	-	2.5	4	mA
	$V_{CC}=18\text{V}, V_{IN}=0\text{V}$		-	-	0.75	
	$V_{CC}=18\text{V}, V_{IN}=V_{CC}$		-	-	0.75	
Under-Voltage Lockout Threshold	V_{CC} Rising, IXD_630M	UVLO	7	9	9.9	V
	V_{CC} Rising, IXD_630		10	12.5	13.5	
Under-Voltage Lockout Hysteresis	IXD_630M	-	-	1	-	V
	IXD_630		-	1.5	-	

1.6 Electrical Characteristics: $T_A = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

Test Conditions: $UVLO \leq V_{CC} \leq 35\text{V}$, $T_J < 150^{\circ}\text{C}$.

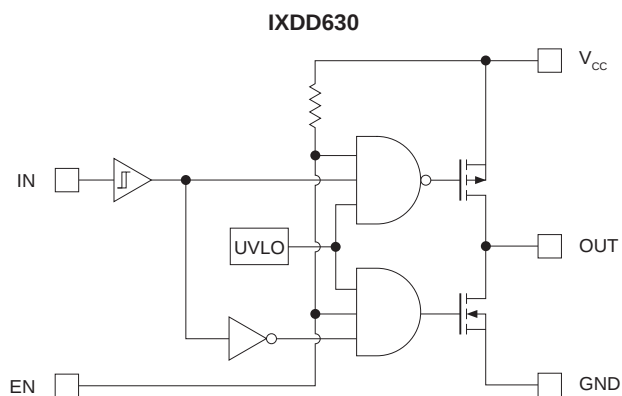
Parameter	Conditions	Symbol	Minimum	Maximum	Units
Input Voltage, High	$UVLO \leq V_{CC} \leq 18\text{V}$	V_{IH}	4	-	V
Input Voltage, Low	$UVLO \leq V_{CC} \leq 18\text{V}$	V_{IL}	-	0.8	
Output Resistance, High State	$V_{CC}=18\text{V}$, $I_{OUT} = -100\text{mA}$	R_{OH}	-	0.6	Ω
Output Resistance, Low State	$V_{CC}=18\text{V}$, $I_{OUT}=100\text{mA}$	R_{OL}	-	0.45	
Rise Time	$C_{LOAD}=5.6\text{nF}$, $V_{CC}=18\text{V}$	t_r	-	35	ns
Fall Time	$C_{LOAD}=5.6\text{nF}$, $V_{CC}=18\text{V}$	t_f	-	35	
On-Time Propagation Delay	$C_{LOAD}=5.6\text{nF}$, $V_{CC}=18\text{V}$	t_{ondly}	-	100	
Off-Time Propagation Delay	$C_{LOAD}=5.6\text{nF}$, $V_{CC}=18\text{V}$	t_{offdly}	-	100	

1.7 Thermal Characteristics

Package	Parameter	Symbol	Rating	Units
IXD_630CI (5-Lead TO-220)	Thermal Impedance, Junction-to-Ambient	θ_{JA}	36	$^{\circ}\text{C/W}$
IXD_630YI (5-Lead TO-263)			46	
IXD_630CI (5-Lead TO-220)	Thermal Impedance, Junction-to-Case	θ_{JC}	3	$^{\circ}\text{C/W}$
IXD_630YI (5-Lead TO-263)			2	

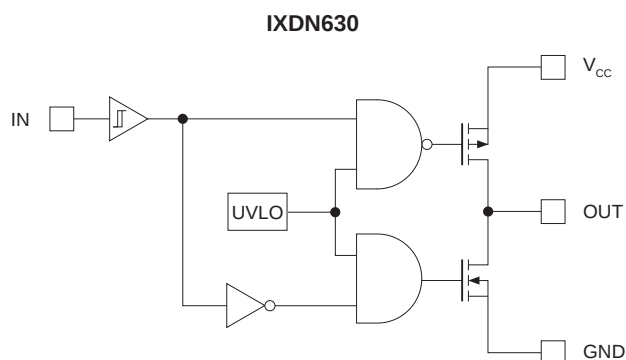
2 Functional Description

2.1 IXDD630 Block Diagram & Truth Table



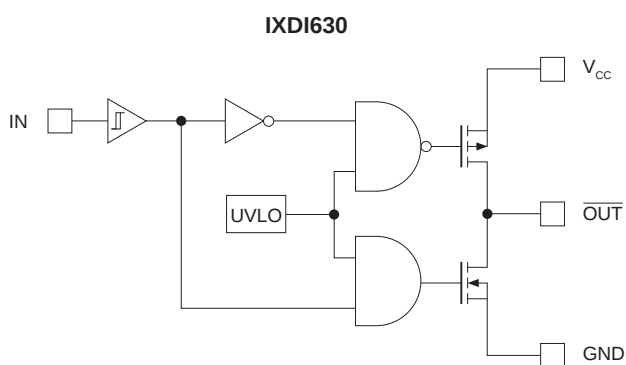
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1	1 or open	1
0	0	Z
1	0	Z

2.3 IXDN630 Block Diagram & Truth Table



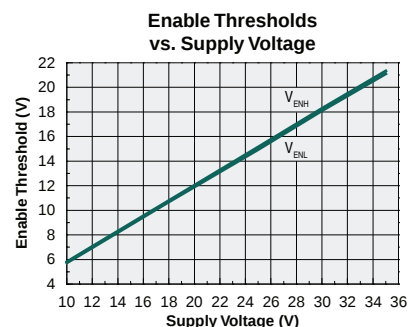
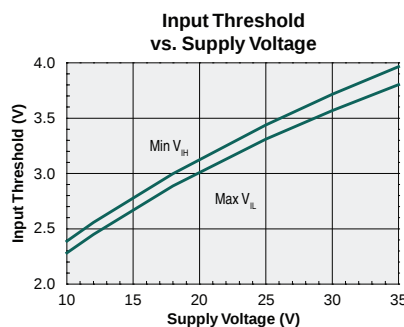
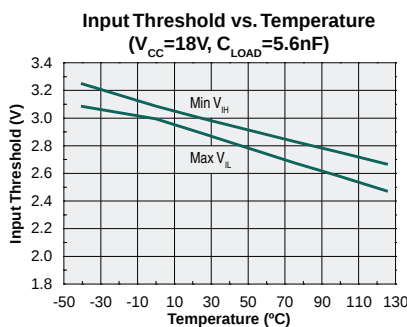
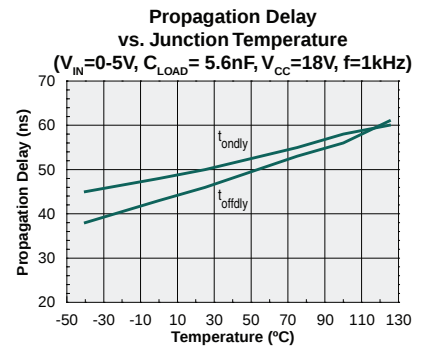
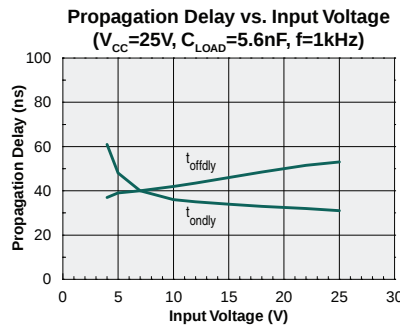
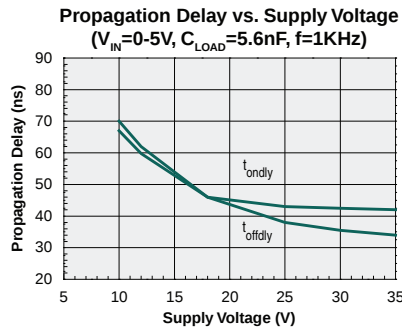
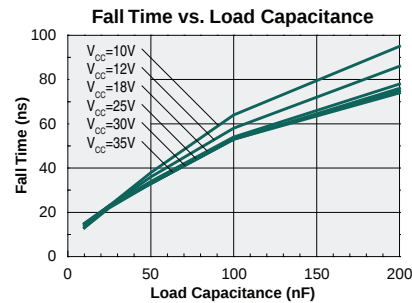
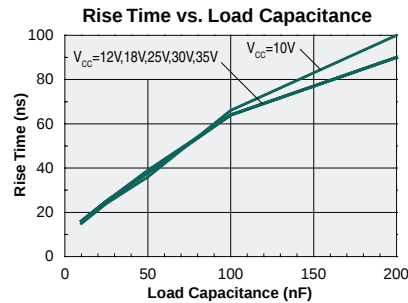
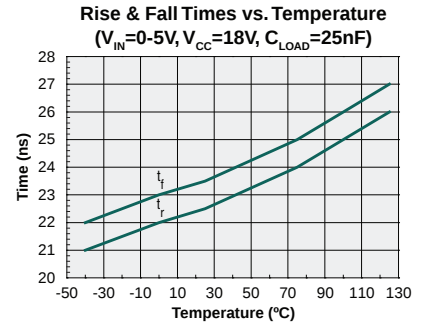
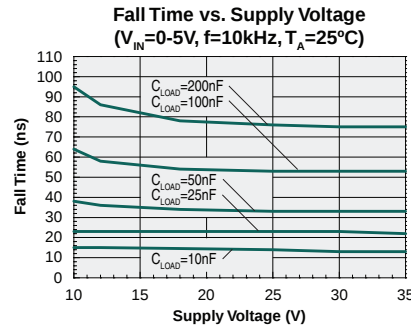
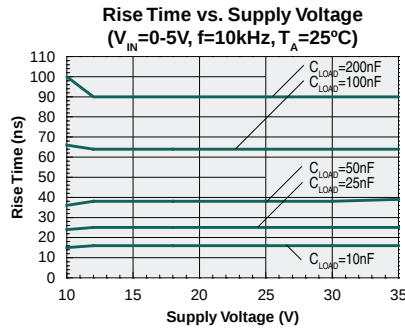
IN	OUT
0	0
1	1

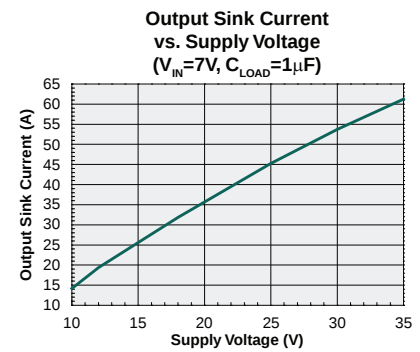
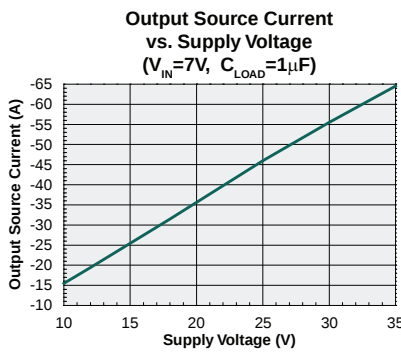
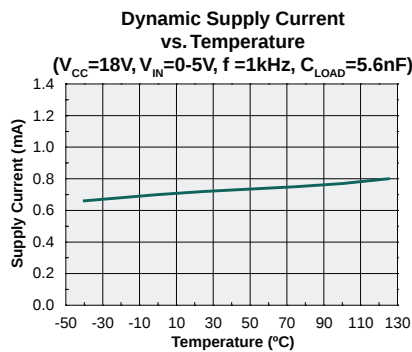
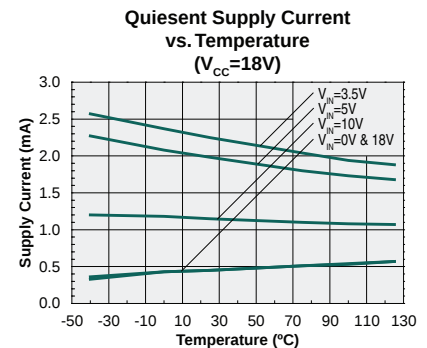
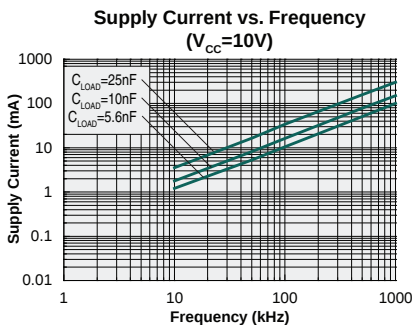
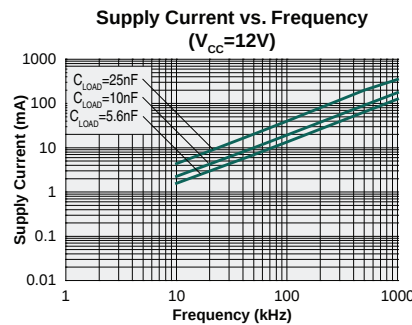
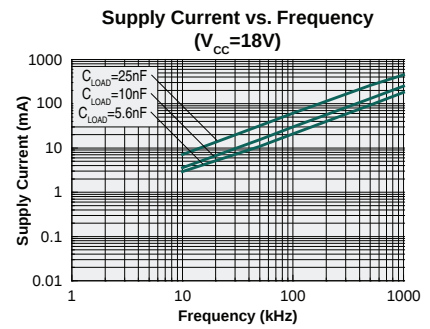
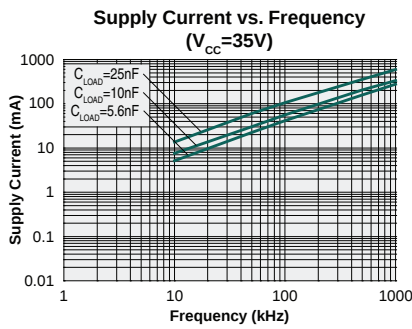
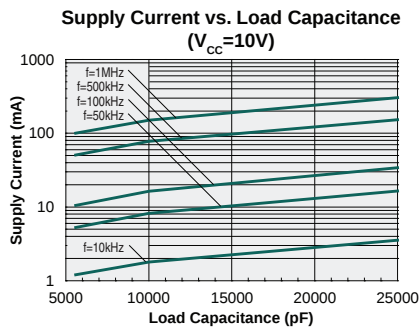
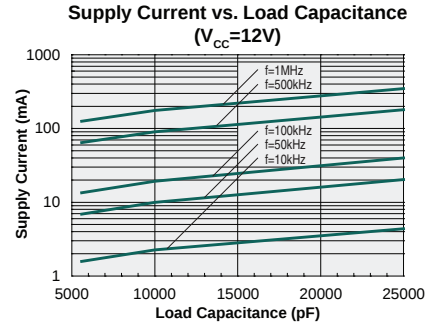
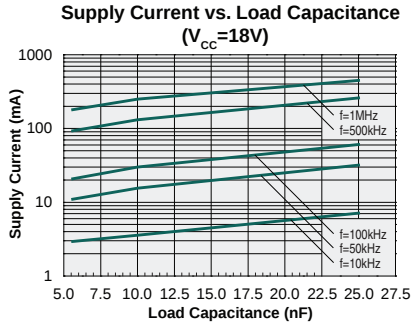
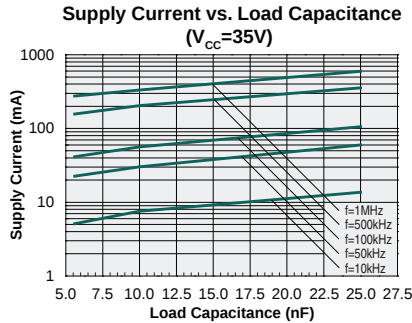
2.2 IXDI630 Block Diagram & Truth Table

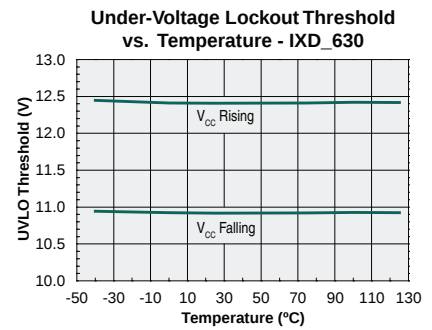
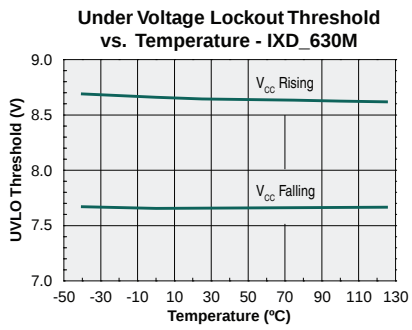
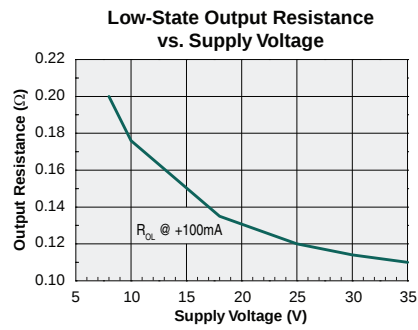
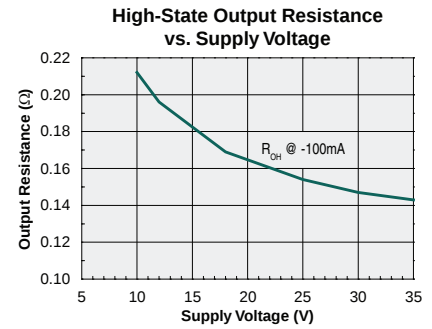
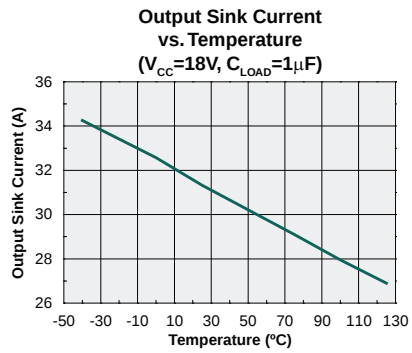
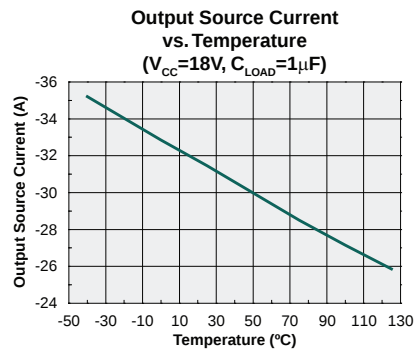


IN	OUT
0	1
1	0

3 Typical Performance Characteristics







4 Manufacturing Information

4.1 Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division classifies its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation.

We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL)** classification as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Classification
IXD_630YI / IXD_630MYI	MSL 3
IXD_630CI / IXD_630MCI	MSL 1

4.2 ESD Sensitivity



This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

4.3 Reflow Profile

Provided in the table below is the Classification Temperature (T_C) of this product and the maximum dwell time the body temperature of this device may be ($T_C - 5$)°C or greater. The classification temperature sets the Maximum Body Temperature allowed for this device during lead-free reflow processes. For through-hole devices, and any other processes, the guidelines of J-STD-020 must be observed.

Device	Classification Temperature (T_C)	Dwell Time (t_p)	Max Reflow Cycles
IXD_630YI / IXD_630MYI	245°C	30 seconds	3
IXD_630CI / IXD_630MCI	245°C	30 seconds	1

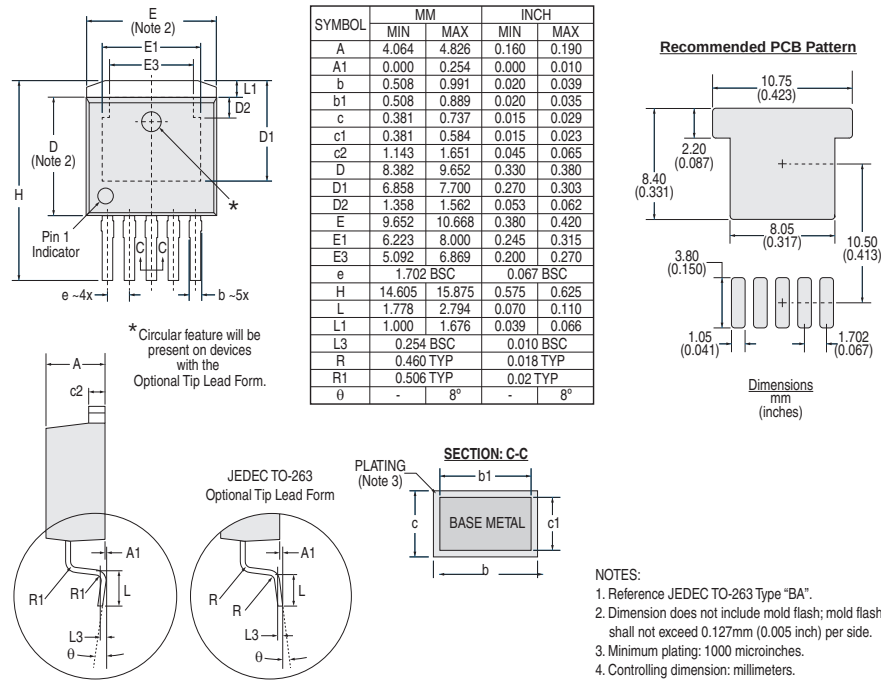
4.4 Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. Board washing to reduce or remove flux residue following the solder reflow process is acceptable provided proper precautions are taken to prevent damage to the device. These precautions include but are not limited to: using a low pressure wash and providing a follow up bake cycle sufficient to remove any moisture trapped within the device due to the washing process. Due to the variability of the wash parameters used to clean the board, determination of the bake temperature and duration necessary to remove the moisture trapped within the package is the responsibility of the user (assembler). Cleaning or drying methods that employ ultrasonic energy may damage the device and should not be used. Additionally, the device must not be exposed to flux or solvents that are Chlorine- or Fluorine-based.

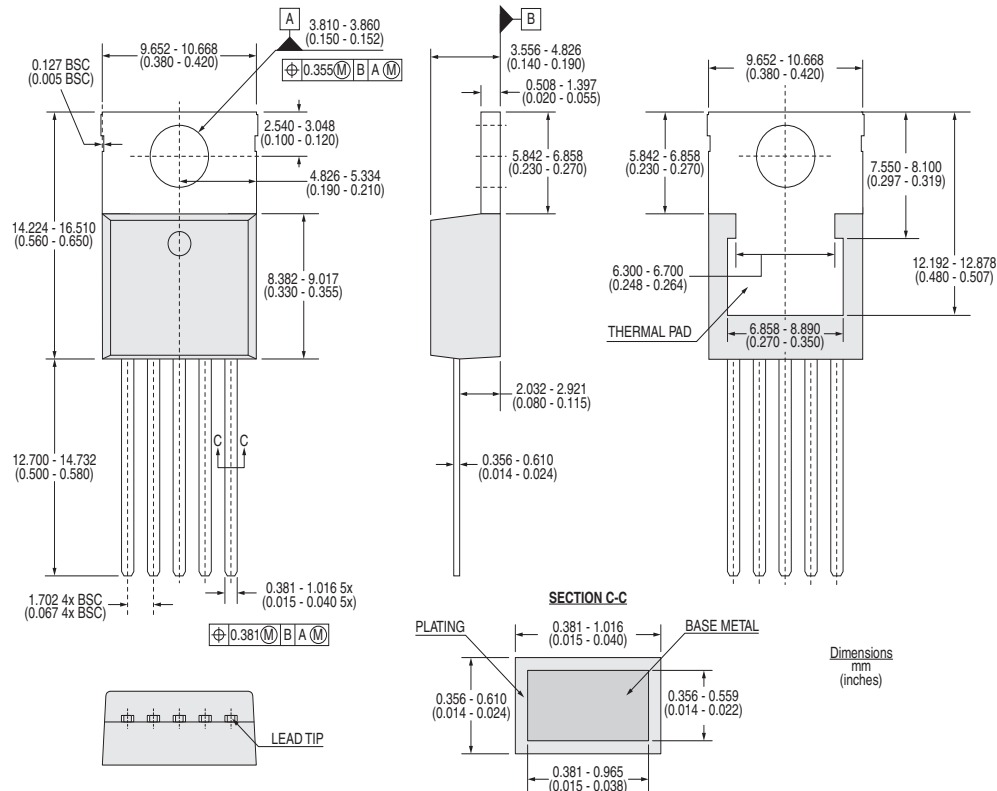


4.5 Mechanical Dimensions

4.5.1 IXD_630YI & IXD_630MYI (5-Lead TO-263)



4.5.2 IXD_630CI & IXD_630MCI(5-Lead TO-220)



For additional information please visit our website at: www.ixysic.com

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Specification: DS-IXD_630-R04
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4/5/2017