Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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IXYS
INTEGRATED CIRCUITS DIVISION

CPC3708
350V N-Channel Depletion Mode FET

Parameter	Rating	Units
Drain-to-Source Voltage - $V_{(BR)DSX}$	350	V
Max On-Resistance - $R_{DS(on)}$	14	Ω
Max Power		
SOT-89 Package	1.1	W
SOT-223 Package	2.5	W

Features

- 350V Drain-to-Source Voltage
- Depletion Mode Device Offers Low $R_{DS(on)}$ at Cold Temperatures
- Low On-Resistance: 8Ω (Typical) @ 25°C
- Low $V_{GS(off)}$ Voltage
- High Input Impedance
- Low Input and Output Leakage
- Small Package Size SOT-89 and SOT-223
- PC Card (PCMCIA) Compatible
- PCB Space and Cost Savings

Applications

- LED Drive Circuits
- Telecommunications
- Normally On Switches
- Ignition Modules
- Converters
- Security
- Power Supplies
- Regulators

Description

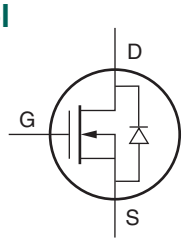
The CPC3708 is a N-channel, depletion mode Field Effect Transistor (FET) that is available in an SOT-223 package (CPC3708Z) and an SOT-89 package (CPC3708C). Both utilize IXYS Integrated Circuits Division's proprietary third-generation vertical DMOS process that realizes world class, high voltage MOSFET performance in an economical silicon gate process. The vertical DMOS process yields a highly reliable device, particularly for use in difficult application environments such as telecommunications, security, and power supplies.

CPC3708Z and the CPC3708C have a typical on-resistance of 8Ω and a drain-to-source voltage of 350V. As with all MOS devices, the FET structure prevents thermal runaway and thermally induced secondary breakdown.

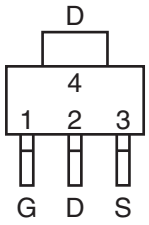
Ordering Information

Part Number	Description
CPC3708CTR	SOT-89: Tape and Reel (1000/Reel)
CPC3708ZTR	SOT-223: Tape and Reel (1000/Reel)

Circuit Symbol



Package Pinout:



Pin Number	Name
1	GATE
2	DRAIN
3	SOURCE
4	DRAIN

Pb RoHS e3

Absolute Maximum Ratings @ 25ºC

Parameter	Ratings	Units
Drain-to-Source Voltage ($V_{(BR)DSX}$)	350	V
Gate-to-Source Voltage (V_{GS})	±20	V
Total Package Dissipation [1]		
SOT-89	1.1	W
SOT-223	2.5	
Operational Temperature	-40 to +110	ºC
Storage Temperature	-40 to +125	ºC

[1] Mounted on 1"x1" FR4 board.

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.

Electrical Characteristics @25ºC (Unless Otherwise Specified)

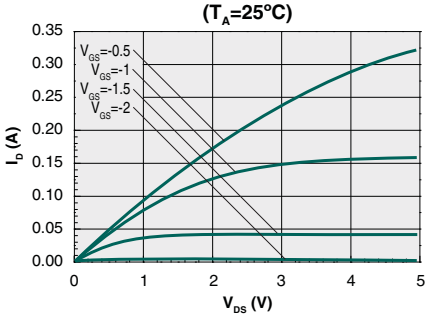
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Gate-to-Source Voltage	V_{GS}	I_D=60mA, V_{DS}=5V	-1.005	-	-1.735	V
Gate-to-Source Off Voltage	$V_{GS(off)}$	I_D=2µA, V_{DS}=10V, V_{DS}=100V	-2	-	-3.6	V
Drain-to-Source Leakage Current	$I_{DS(off)}$	V_{GS}= -5V, V_{DS}=190V	-	-	20	nA
		V_{GS}= -5V, V_{DS}=350V	-	-	1	µA
Drain Current	I_D	V_{GS}= -2.7V, V_{DS}=5V, V_{DS}=50V	-	-	5	mA
		V_{GS}= -0.57V, V_{DS}=5V	130	-	-	mA
On-Resistance	$R_{DS(on)}$	V_{GS}= -0.35V, I_{DS}=50mA	-	8	14	Ω
Gate Leakage Current	I_{GSS}	V_{GS}=±20V	-	-	100	nA
Gate Capacitance	C_{ISS}	V_{DS}= V_{GS}=0V	-	-	300	pF

Thermal Resistance

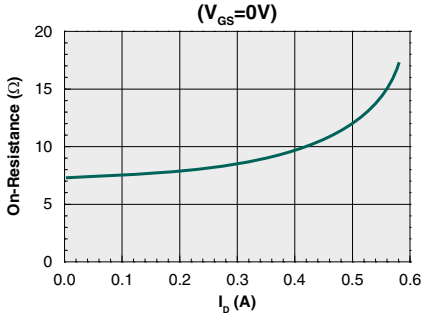
Package	Parameter	Symbol	Conditions	Min	Typ	Max	Units
SOT-89	Junction to Case	$R_{\theta JC}$	-	-	-	50	ºC/W
	Junction to Ambient	$R_{\theta JA}$				90	
SOT-223	Junction to Case	$R_{\theta JC}$	-	-	-	14	
	Junction to Ambient	$R_{\theta JA}$				55	

CPC3708Z (SOT-223) PERFORMANCE DATA*

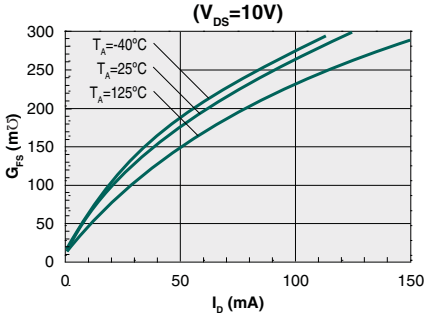
Output Characteristics (T_A=25°C)



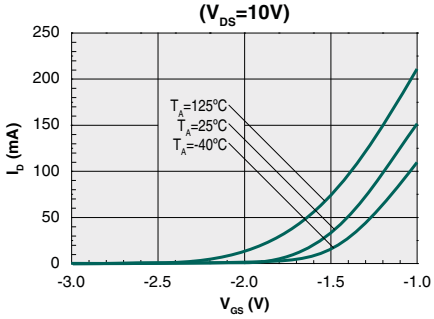
On-Resistance vs. Drain Current (V_{GS}=0V)



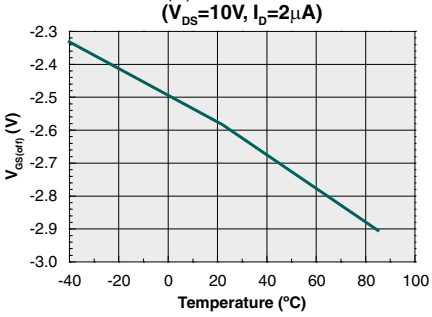
Transconductance vs Drain Current (V_{DS}=10V)



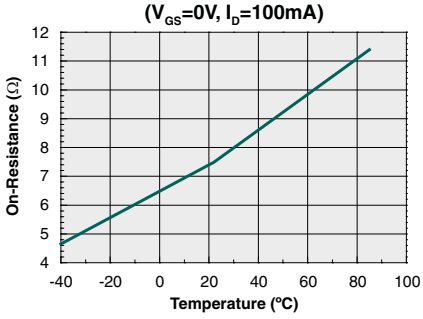
Transfer Characteristics (V_{DS}=10V)



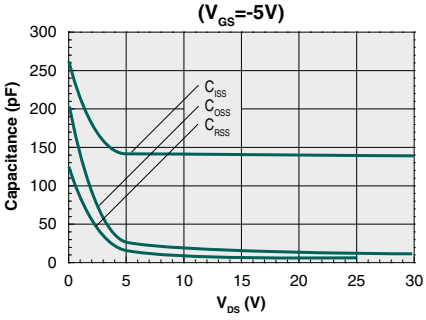
$V_{GS(off)}$ vs. Temperature (V_{DS}=10V, I_D=2μA)



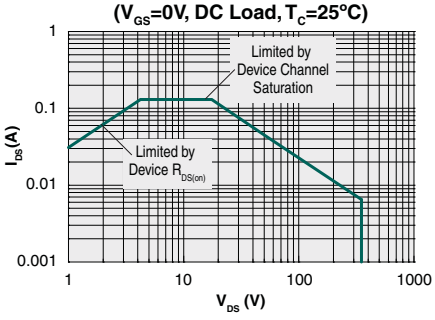
On-Resistance vs. Temperature (V_{GS}=0V, I_D=100mA)



Capacitance vs. Drain-Source Voltage (V_{GS}=-5V)



Forward Safe Operating Bias (V_{GS}=0V, DC Load, T_C=25°C)



*The Performance data shown in the graphs above is typical of device performance in SOT-223 Package. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Manufacturing Information

Moisture Sensitivity

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. IXYS Integrated Circuits Division classified all of 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) rating** 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) Rating
CPC3708C / CPC3708Z	MSL 1

ESD Sensitivity

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

Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

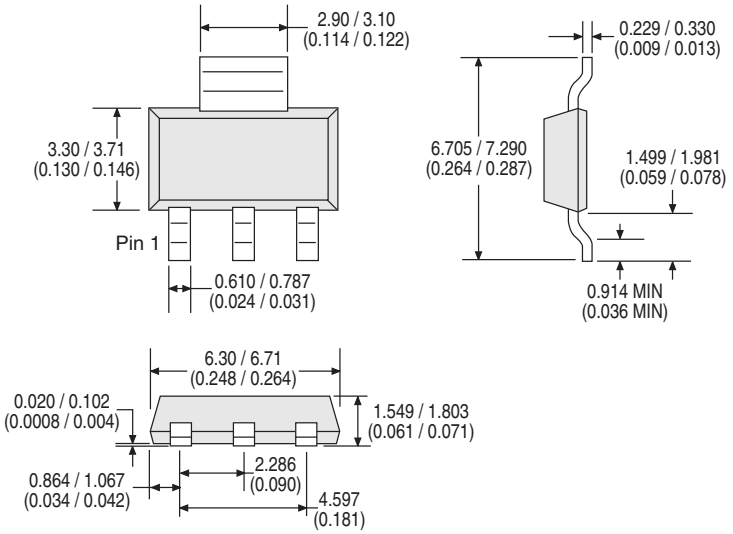
Device	Maximum Temperature x Time
CPC3708C / CPC3708Z	260°C for 30 seconds

Board Wash

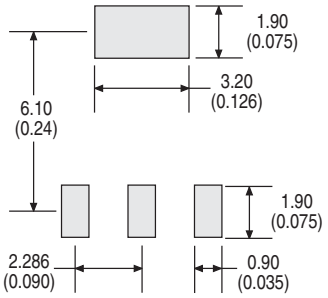
IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable, and the use of a short drying bake may be necessary. Chlorine-based or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

MECHANICAL DIMENSIONS

CPC3708Z

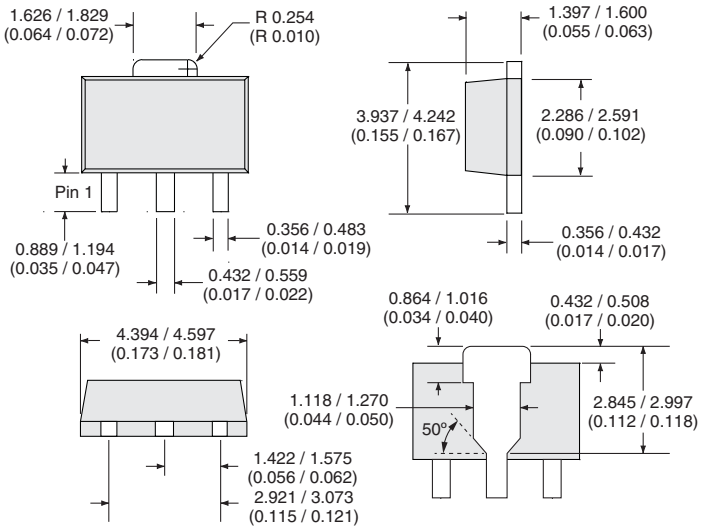


PCB Land Pattern

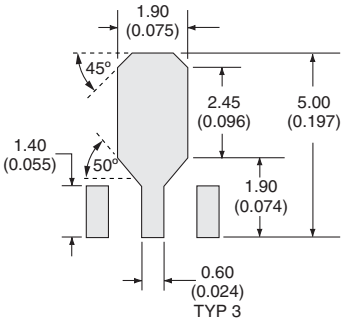


Dimensions
mm MIN / mm MAX
(inches MIN / inches MAX)

CPC3708C



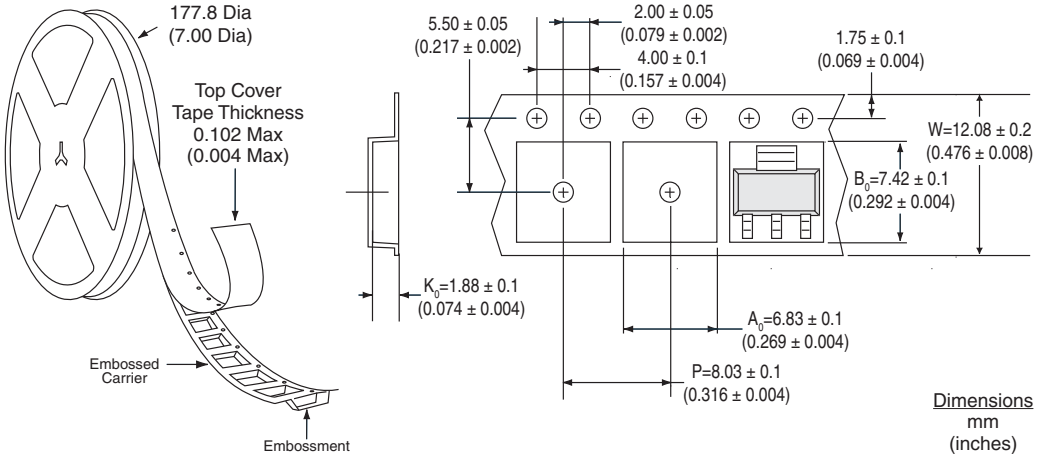
PCB Land Pattern



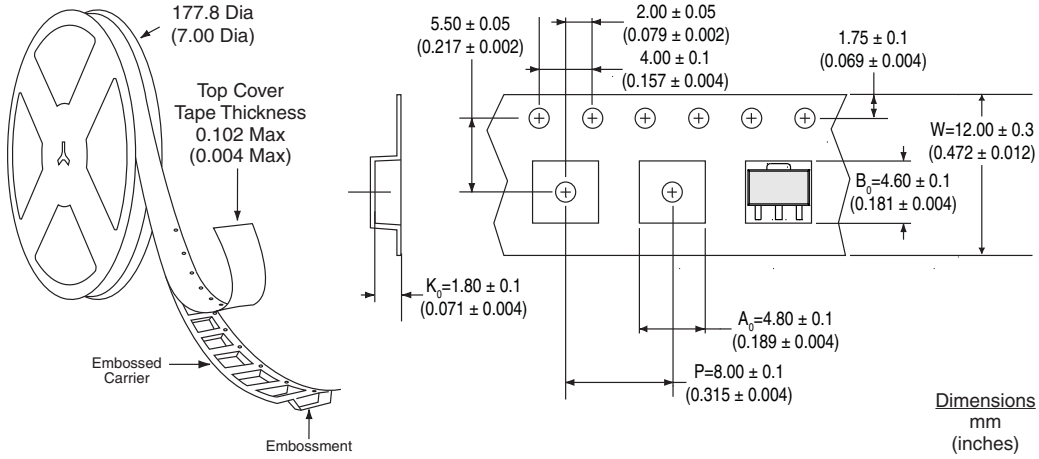
Dimensions
mm MIN / mm MAX
(inches MIN / inches MAX)

MECHANICAL DIMENSIONS

CPC3708ZTR Tape & Reel



CPC3708CTR Tape & Reel



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

Specification: DS-CPC3708-R03

8/1/2014