

$BV_{DSX}/$ $BV_{DGX}$	$R_{DS(ON)}$ (max)	$I_{DSS}$ (min)	Package
350V	30Ω	140mA	SOT-89

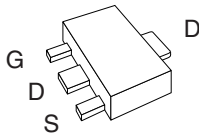
### Features

- Depletion mode device offers low  $R_{DS(ON)}$  at cold temperatures
- Low on resistance 30 ohms max. at 25°C
- High input impedance
- High breakdown voltage 350V
- Low  $V_{GS(off)}$  voltage -1.6 to -3.9V
- Small package size SOT-89

### Applications

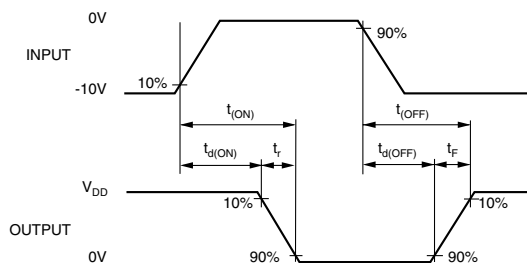
- Ignition modules
- Normally-on switches
- Solid state relays
- Converters
- Telecommunications
- Power supply

### Package Pinout



(SOT-89)

### Switching Waveform



### Description

The CPC3730C is an N-channel depletion mode field effect transistor (FET) that utilizes Clare's proprietary third generation vertical DMOS process. Third generation process realizes world class, high voltage MOSFET performance in an economical silicon gate process. Our vertical DMOS process yields a robust device for high power applications with high input impedance. The CPC3730C is a highly reliable FET device that has been used extensively in Clare's solid state relays for industrial and telecommunications applications.

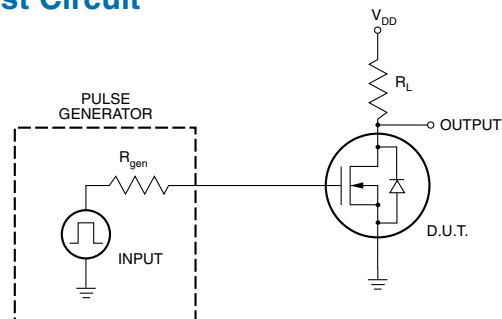
This device excels in power applications requiring low drain-source resistance, particularly in cold environments such as automotive ignition modules. The CPC3730C offers a low 30 ohm maximum on-state resistance at 25°C.

The CPC3730C has a minimum breakdown voltage of 350V and is available in an SOT-89 package. As with all MOS devices, the FET structure prevents thermal runaway and thermal-induced secondary breakdown.

### Ordering Information

Part #	Description
CPC3730C	SOT-89 (100/Tube)
CPC3730CTR	SOT-89 (2000/Reel)

### Test Circuit



## Absolute Maximum Ratings (@ 25°C)

Parameter	Ratings	Units
Drain-to-Source Voltage	350	V
Gate-to-Source Voltage	±20	V
Total Package Dissipation	1.6 <sup>1</sup>	W
Operational Temperature	-55 to +125	°C
Storage Temperature	-55 to +125	°C

<sup>1</sup> Mounted on FR4 board 1"x1"x0.062"

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

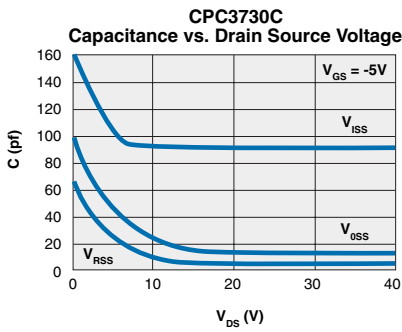
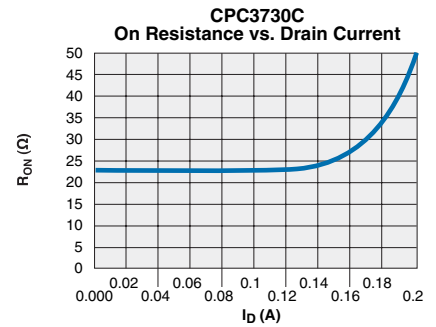
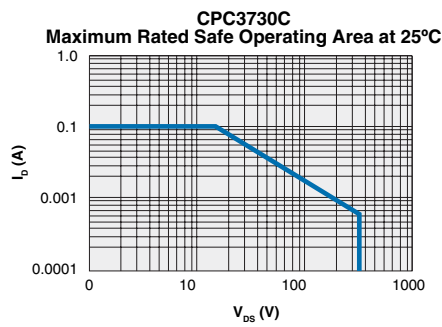
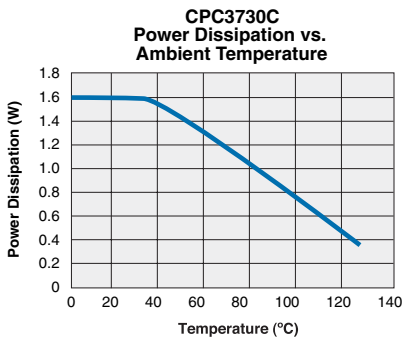
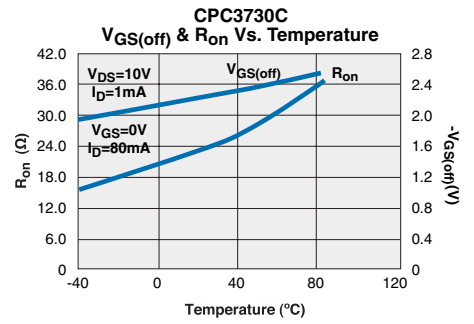
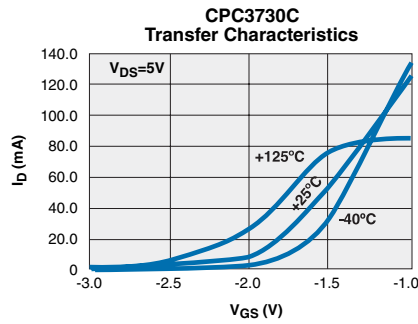
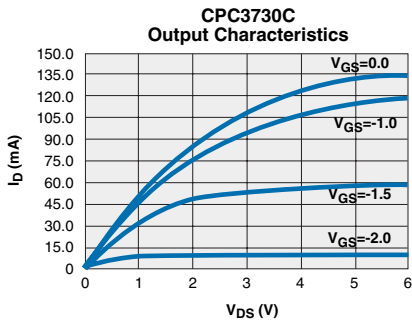
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-to-Source Breakdown Voltage	$BV_{DSX}$	$V_{GS} = -5V, I_D = 100\mu A$	350	-	-	V
Gate-to-Source Off Voltage	$V_{GS(off)}$	$I_{DS} = 15V, I_D = 1mA$	-1.6	-	-3.9	V
Change in $V_{GS(off)}$ with Temperatures	$dV_{GS(off)}/dT$	$V_{DS} = 15V, I_D = 1mA$	-	-	4.5	mV/°C
Gate Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	100	nA
Drain-to-Source Leakage Current	$I_{D(off)}$	$V_{GS} = -5V, V_{DS} = \text{Max Rating}$	-	-	1	$\mu A$
		$V_{GS} = -5V, V_{DS} = 0.8 \text{ Max Rating } T_A = 125^\circ C$	-	-	1	mA
Saturated Drain-to-Source Current	$I_{DSS}$	$V_{GS} = 0V, V_{DS} = 15V$	140mA	-	-	mA
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 0V, I_D = 140mA$	-	-	30	$\Omega$
Change in $R_{DS(on)}$ with Temperatures	$dR_{DS(on)}/dT$	$V_{GS} = 0V, I_D = 140mA$	-	-	1.1	%/°C
Forward Transconductance	$G_{FS}$	$I_D = 100mA, V_{DS} = 10V$	150	-	-	$m\Omega$
Input Capacitance	$C_{ISS}$	$V_{GS} = -5V$ $V_{DS} = 25V$ $f = 1MHz$	-	100	200	pF
Common Source Output Capacitance	$C_{OSS}$		-	20	100	
Reverse Transfer Capacitance	$C_{RSS}$		-	5	80	
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD} = 25V$ $I_D = 150mA$ $V_{GS} = 0V \text{ to } -10V$ $R_{GEN} = 50\Omega$	-	20	-	ns
Rise Time	$t_r$		-	10	-	
Turn-OFF Delay Time	$t_{d(off)}$		-	20	-	
Fall time	$t_f$		-	50	-	
Source-Drain Diode Voltage Drop	$V_{SD}$	$V_{GS} = -5V, I_{SD} = 150mA$	-	0.6	1.8	V

## Thermal Characteristics

Package	$I_D$ (continuous)	$I_D$ (pulsed)	Power Dissipation @ $T_A = 25^\circ C$	$\theta_{jc}$ °C/W	$I_{DR}$	$I_{DRM}$
SOT-89	140mA	600mA	1.6W <sup>1</sup>	15	140mA	600mA

<sup>1</sup> Mounted on FR4 board 1"x1"x0.062"

**PERFORMANCE DATA\***



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

## Manufacturing Information

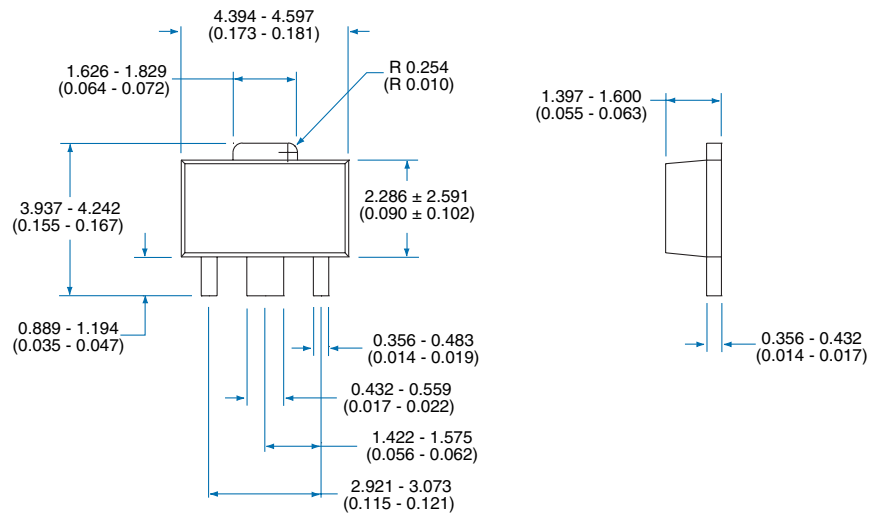
### Soldering

Recommended soldering processes are limited to 220°C component body temperature for 10 seconds.

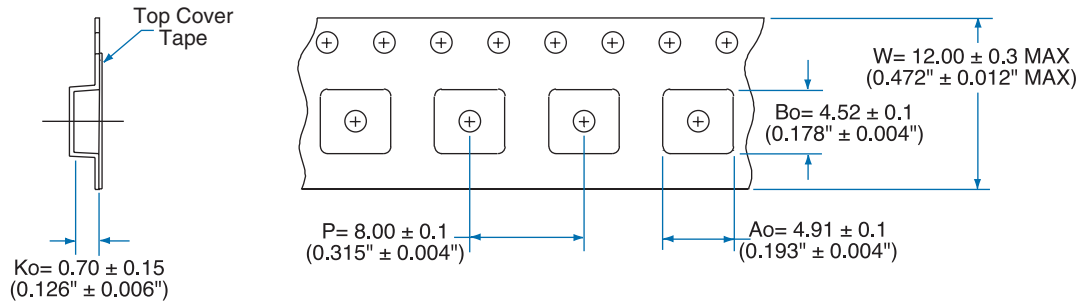
### Washing

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

## MECHANICAL DIMENSIONS



### Tape and Reel Information



Dimensions:  
mm  
(inches)

For additional information please visit our website at: [www.clare.com](http://www.clare.com)

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