

$BV_{DSX}/BV_{DGX}$	$R_{DS(ON)}$ (max)	$I_{DSS}$ (min)	Package
250V	4.0Ω	300mA	SOT-89

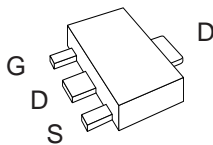
#### Features

- Depletion mode device offers low  $R_{DS(ON)}$  at cold temperatures
- Low on resistance 4 ohms max. at 25°C
- High input impedance
- High breakdown voltage 250V
- Low  $V_{GS(off)}$  voltage -1.6 to -3.9V
- Small package size SOT-89

#### Applications

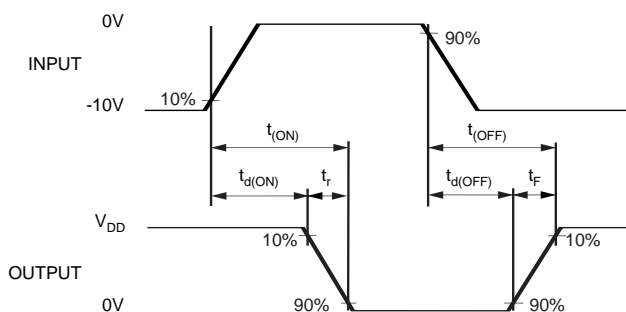
- Ignition modules
- Normally-on switches
- Solid state relays
- Converters
- Telecommunications
- Power supply

#### Package Pinout



(SOT-89)

#### Switching Waveforms and Test Circuit



#### Description

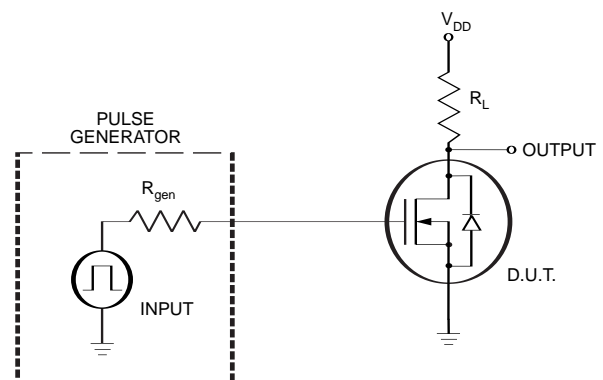
The CPC3703C is an N-channel depletion mode field effect transistor (FET) that utilizes Clare's proprietary third generation vertical DMOS process. Third generation process realizes world class, high voltage MOSFET performance in an economical silicon gate process. Our vertical DMOS process yields a robust device for high power applications with high input impedance. The CPC3703C 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 CPC3703C offers a low 4 ohm maximum on-state resistance at 25°C.

The CPC3703C has a minimum breakdown voltage of 250V 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
CPC3703C	SOT-89 (100/Tube)
CPC3703CTR	SOT-89 (2000/Reel)



### Absolute Maximum Ratings

Parameter	Ratings	Units
Drain-to-Source Voltage	250	V
Gate-to-Source Voltage	$\pm 20$	V
Total Package Dissipation	1.6	W
Operational Temperature	-55 to +125	$^{\circ}\text{C}$
Storage Temperature	-55 to +125	$^{\circ}\text{C}$
Soldering Temperature (10 seconds Max)	+220	$^{\circ}\text{C}$

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.

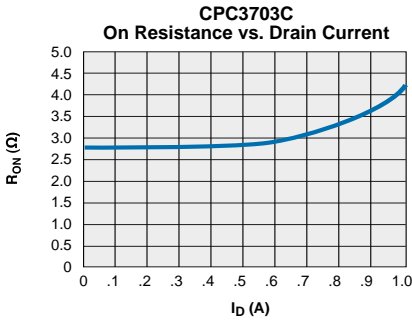
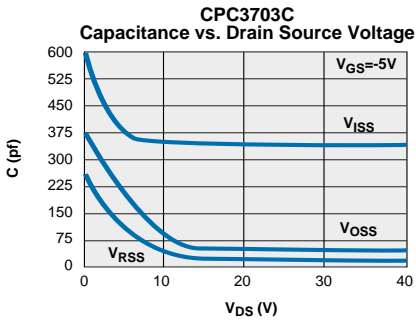
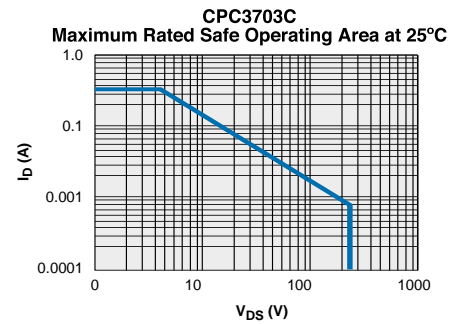
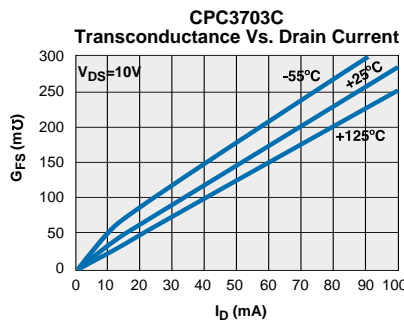
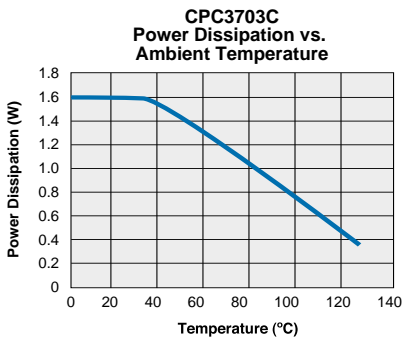
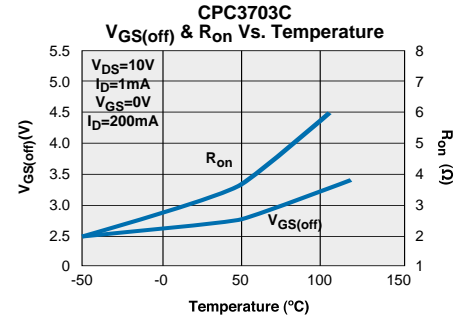
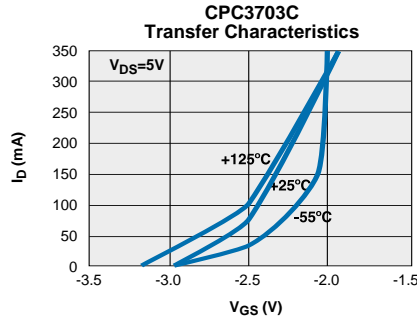
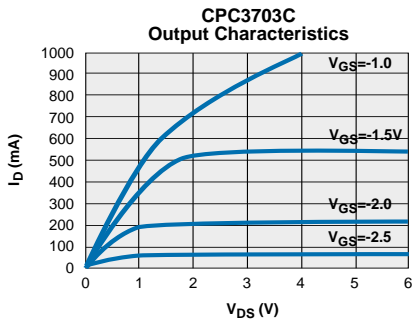
### Thermal Characteristics

Package	$I_D$ (continuous)	$I_D$ (pulsed)	Power Dissipation @ $T_A=25^{\circ}\text{C}$	$\theta_{jc}$ $^{\circ}\text{C}/\text{W}$	$I_{DR}$	$I_{DRM}$
SOT-89	360mA	600mA	1.6W	15	360mA	600mA

### Electrical Characteristics (@25 $^{\circ}\text{C}$ unless otherwise specified)

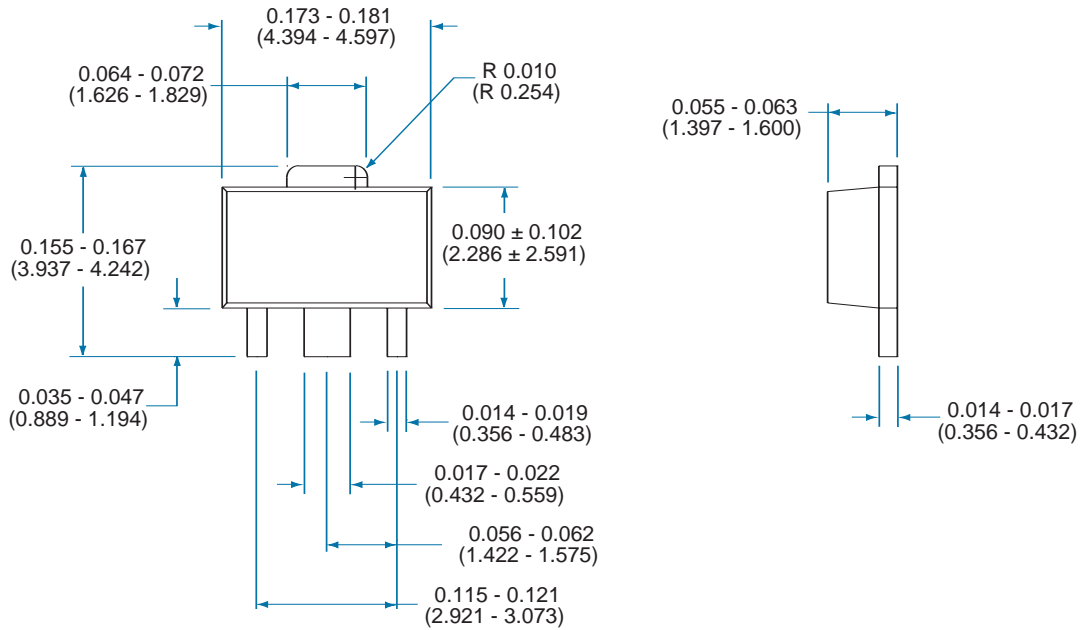
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-to-Source Breakdown Voltage	$BV_{DSX}$	$V_{GS} = -5.0\text{V}, I_D = 100\mu\text{A}$	250	-	-	V
Gate-to-Source Off Voltage	$V_{GS(off)}$	$I_{DS} = 15\text{V}, I_D = 1.0\text{mA}$	-1.6	-	-3.9	V
Change in $V_{GS(off)}$ with Temperatures	$\frac{dV_{GS(off)}}{dT}$	$V_{DS} = 15\text{V}, I_D = 1.0\text{mA}$	-	-	4.5	mV/ $^{\circ}\text{C}$
Gate Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$	-	-	100	nA
Drain-to-Source Leakage Current	$I_{D(off)}$	$V_{GS} = -5\text{V}, V_{DS} = \text{Max Rating}$	-	-	1	$\mu\text{A}$
		$V_{GS} = -5\text{V}, V_{DS} = 0.8 \text{ Max Rating } T_A = 125^{\circ}\text{C}$	-	-	1	mA
Saturated Drain-to-Source Current	$I_{DSS}$	$V_{GS} = 0\text{V}, V_{DS} = 15\text{V}$	300	-	-	mA
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	$V_{GS} = 0\text{V}, I_D = 200\text{mA}$	-	-	4.0	$\Omega$
Change in $R_{DS(on)}$ with Temperatures	$\frac{dR_{DS(on)}}{dT}$	$V_{GS} = 0\text{V}, I_D = 200\text{mA}$	-	-	1.1	%/ $^{\circ}\text{C}$
Forward Transconductance	$G_{FS}$	$I_D = 100\text{mA}, V_{DS} = 10\text{V}$	225	-	-	m $\Omega$
Input Capacitance	$C_{ISS}$	$V_{GS} = -5\text{V}$	-	327	350	pF
Common Source Output Capacitance	$C_{OSS}$	$V_{DS} = 25\text{V}$	-	51	65	
Reverse Transfer Capacitance	$C_{RSS}$	$f = 1.0\text{MHz}$	-	27	35	
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD} = 25\text{V}$	-	23	35	ns
Rise Time	$t_r$	$I_D = 150\text{mA}$	-	8	20	
Turn-OFF Delay Time	$t_{d(off)}$	$V_{GS} = 0\text{V to } -10\text{V}$	-	17	25	
Fall time	$t_f$	$R_{GEN} = 50\Omega$	-	70	80	
Source-Drain Diode Voltage Drop	$V_{SD}$	$V_{GS} = -5.0\text{V}, I_{SD} = 150\text{mA}$	-	0.6	1.8	V

**PERFORMANCE DATA\***



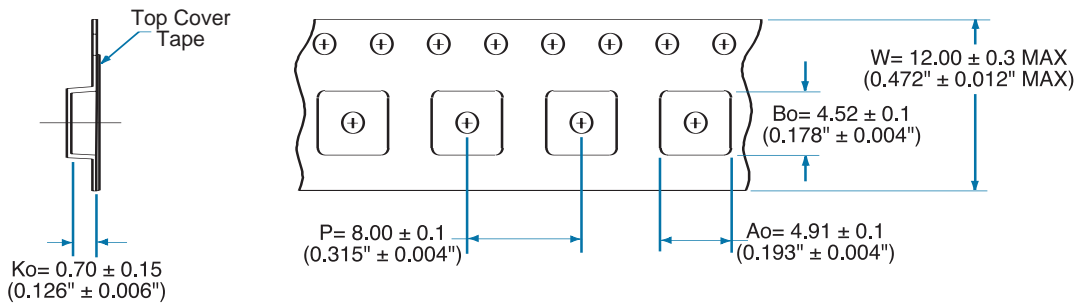
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

**MECHANICAL DIMENSIONS**



Dimensions  
inches  
(mm)

**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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