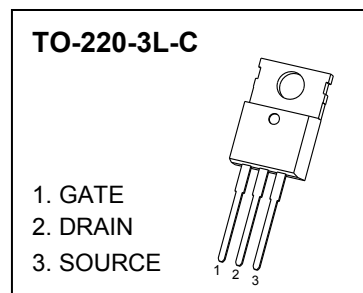




## TO-220-3L-C Plastic-Encapsulate MOSFETS

### CJP360JN65 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	$I_D$
650V	320mΩ@10V	11.5A



#### DESCRIPTION

The CJP360JN65 uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.

#### FEATURES

- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized Avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

#### APPLICATIONS

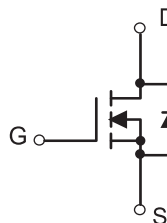
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

#### MARKING



P360JN65= Device code.  
Solid dot = Green molding compound device,  
if none, the normal device.  
XXXX = Code.

#### EQUIVALENT CIRCUIT



#### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted )

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	650	V
Gate-Source Voltage, AC ( $f > 1\text{Hz}$ )	$V_{GS}$	$\pm 30$	V
Continuous Drain Current	$I_D$ <sup>①</sup>	11.5	A
Pulsed Drain Current	$I_{DM}$ <sup>②</sup>	46	A
Single Pulsed Avalanche Energy	$E_{AS}$ <sup>③</sup>	55	mJ
Power Dissipation	$P_D$ <sup>①</sup>	104	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$ <sup>⑥</sup>	42.5	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$ <sup>①</sup>	1.2	$^\circ\text{C/W}$
Junction Temperature and Storage Temperature Range	$T_J$ $T_{stg}$	-55 ~ +150	$^\circ\text{C}$

# MOSFET ELECTRICAL CHARACTERISTICS

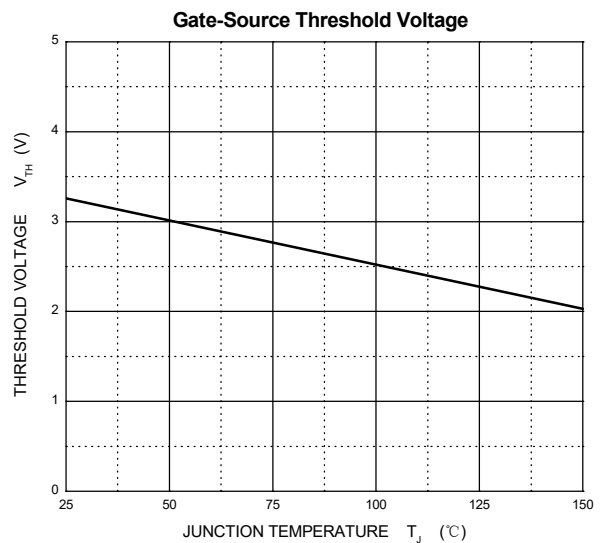
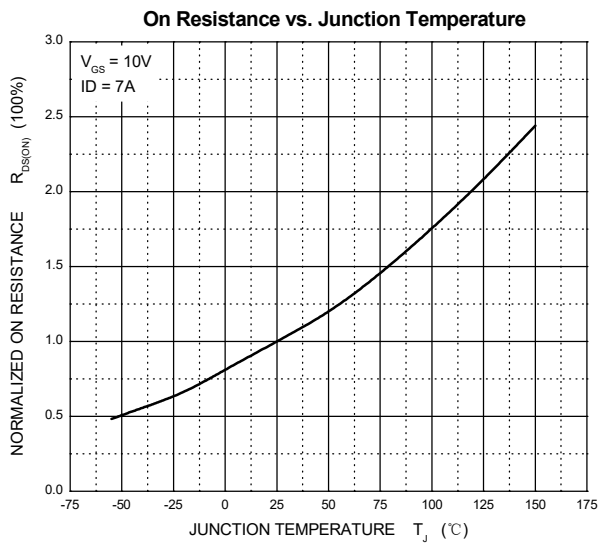
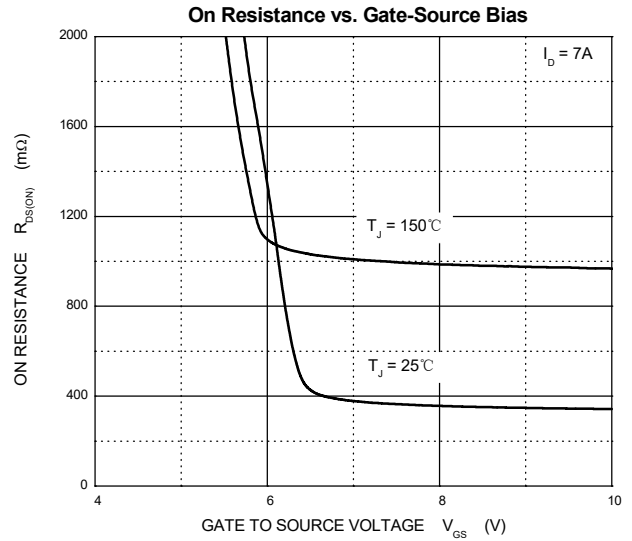
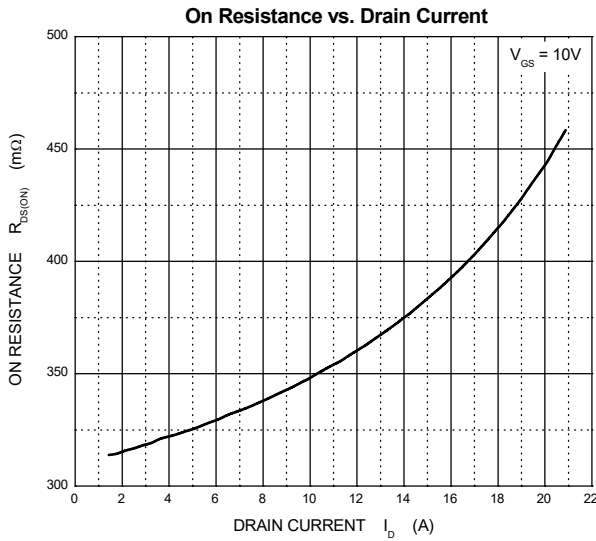
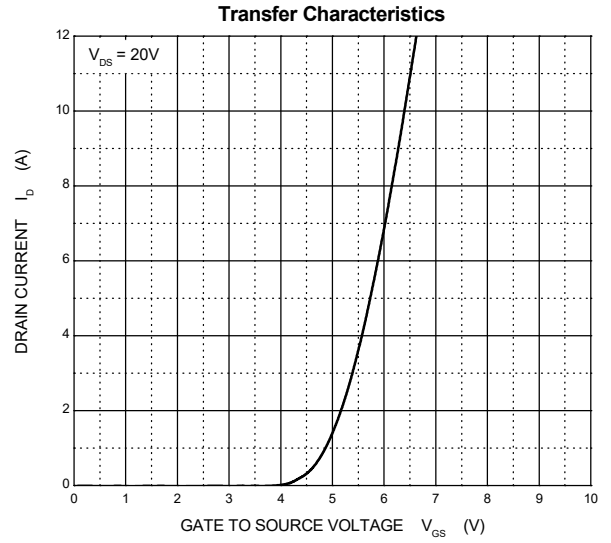
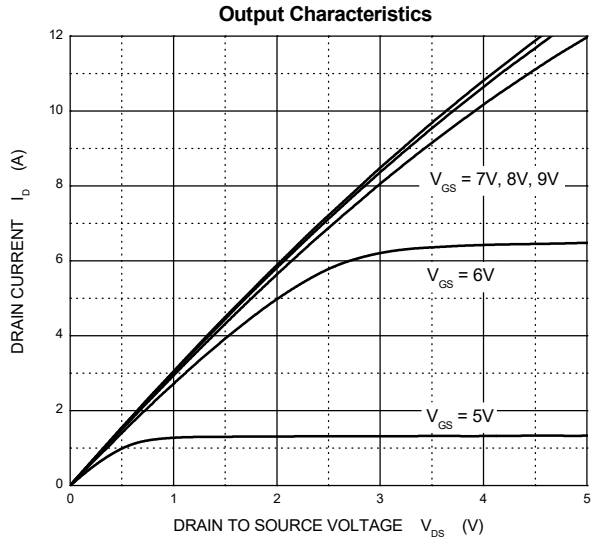
$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650	—	—	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 650V, T_J = 25\text{ }^\circ\text{C}$	—	—	1.0	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$	—	—	$\pm 100$	nA
<b>On characteristics</b> <sup>④</sup>						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.5	4.5	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 7A$	—	320	360	m $\Omega$
<b>Dynamic characteristics</b> <sup>⑤</sup>						
Input capacitance	$C_{iss}$	$V_{DS} = 50V, V_{GS} = 0V,$ $f = 100KHz$	—	825	—	pF
Output capacitance	$C_{oss}$		—	40	—	
Reverse transfer capacitance	$C_{rss}$		—	0.85	—	
Gate resistance	$R_g$	$f = 1MHz$	—	21	—	$\Omega$
<b>Switching characteristics</b> <sup>⑤</sup>						
Total gate charge	$Q_g$	$V_{DS} = 480V,$ $V_{GS} = 10V,$ $I_D = 11.5A$	—	22	—	nC
Gate-source charge	$Q_{gs}$		—	4.5	—	
Gate-drain charge	$Q_{gd}$		—	10	—	
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 380V, V_{GS} = 10V,$ $R_G = 2.5\Omega, R_L = 15\Omega$	—	11	—	ns
Turn-on rise time	$t_r$		—	5	—	
Turn-off delay time	$t_{d(off)}$		—	55	—	
Turn-off fall time	$t_f$		—	5	—	
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage	$V_{SD}$ <sup>④</sup>	$V_{GS} = 0V, I_S = 11.5A$	—	—	1.2	V
Continuous drain-source diode forward current	$I_S$ <sup>①</sup>		—	—	11.5	A
Pulsed drain-source diode forward current	$I_{SM}$ <sup>②</sup>		—	—	46	A

Notes:

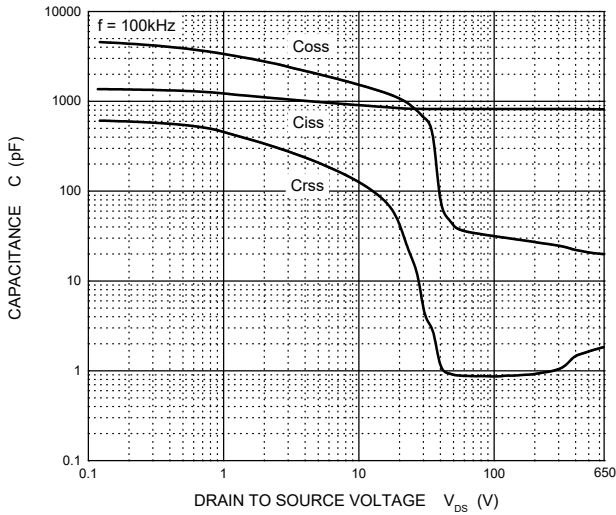
1.  $T_C = 25\text{ }^\circ\text{C}$  Limited only by maximum temperature allowed.
2.  $P_W \leq 10\mu s$ , Duty cycle  $\leq 1\%$ .
3. EAS condition:  $V_{DD} = 50V, V_{GS} = 10V, L = 1mH, R_g = 25\Omega$  Starting  $T_J = 25\text{ }^\circ\text{C}$ .
4. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
5. Guaranteed by design, not subject to production.
6. Device mounted in a still air environment with  $T_a = 25\text{ }^\circ\text{C}$ .

# Typical Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

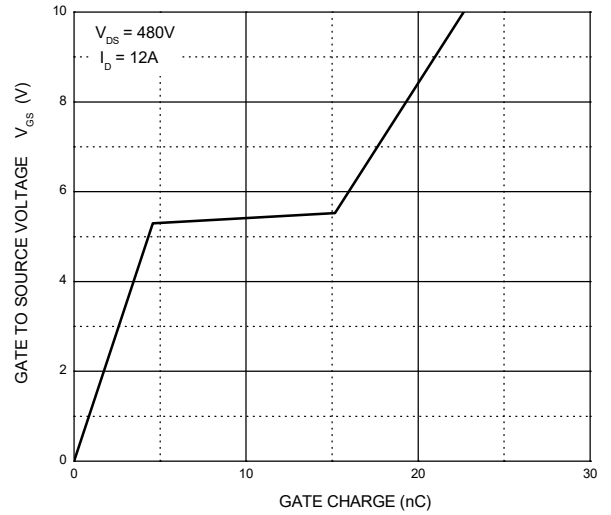


# Typical Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

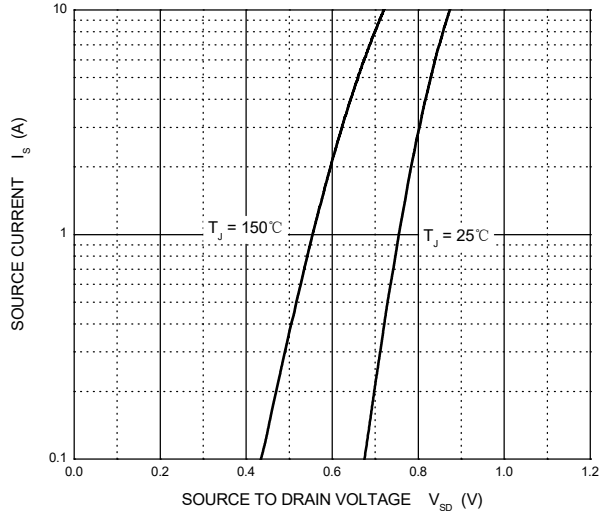
### Typical Capacitances



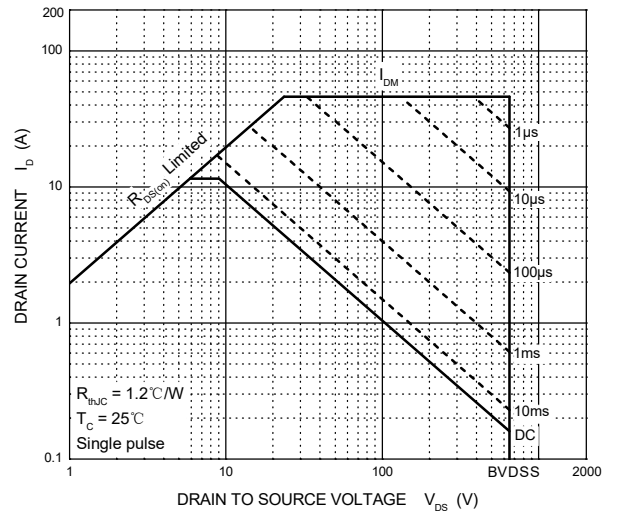
### Gate Charge



### Source-Drain Diode Forward Characteristics



### Maximum Safe Operating Area



### Transient Thermal Impedance, Junction-Case

