

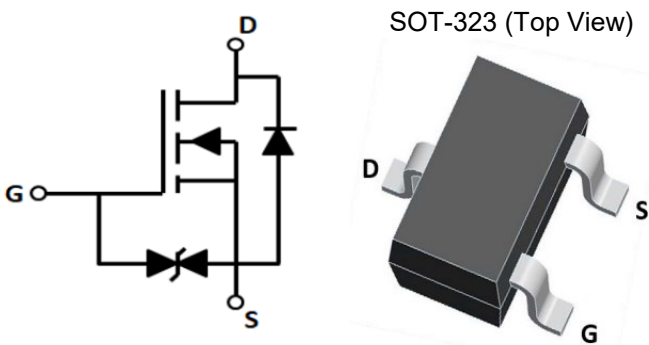
### Description

CM2N7002DW is the N-Channel enhancement mode power field effect transistors with high cell density, trench technology. This high density process and design have been optimized switching performance and especially tailored to minimize on-state resistance.

### Features

- $V_{DS}$ : 60V
- $I_D$ : 300mA
- $R_{DS(on)}$  (@ $V_{GS}=10V$ ) : < 2.5 $\Omega$
- $R_{DS(on)}$  (@ $V_{GS}=4.5V$ ) : < 3.0 $\Omega$
- High density cell design for extremely low  $R_{DS(on)}$
- Excellent on-resistance and DC current capability

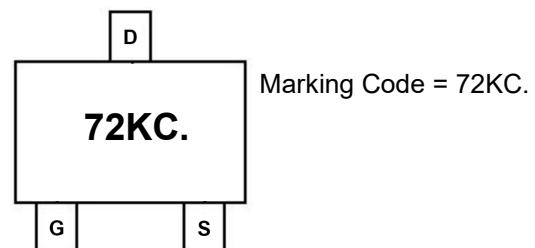
### Equivalent Circuit and Pin Configuration



### Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Portable Instrumentation
- Load switch

### Marking Information



### Ordering Information

Part Number	Packaging	Reel Size
CM2N7002DW	3000/Tape & Reel	7 inch

### Absolute Maximum Ratings (TA=25 °C unless otherwise noted)

Parameter	Symbol	Maximum	Unit	
Drain-source Voltage	$V_{DS}$	60	V	
Gate-source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	300	mA
		$T_A=70^\circ C$	240	mA
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	1.5	A	
Total Power Dissipation @ $T_A=25^\circ C$ <sup>(2)</sup>	$P_D$	300	mW	
Thermal Resistance Junction-to-Ambient <sup>(2)</sup>	$R_{\theta JA}$	416	$^\circ C/W$	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$	

**Electrical Characteristics (T<sub>J</sub>=25 °C unless otherwise noted)**

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±10	μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		2.5	V
Static Drain-Source on-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =300mA		1.9	2.5	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA		2.0	3.0	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =300mA, V <sub>GS</sub> =0V			1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				300	mA
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz		28		pF
Output Capacitance	C <sub>oss</sub>			4		
Reverse Transfer Capacitance	C <sub>rss</sub>			3		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =0.3A		1.70		nC
Gate Source Charge	Q <sub>gs</sub>			0.35		
Gate Drain Charge	Q <sub>gd</sub>			0.55		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, I <sub>D</sub> =0.3A, R <sub>GEN</sub> =6Ω		5		ns
Turn-off Delay Time	t <sub>D(off)</sub>			10		

Noted: (1) Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.

(2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. With 2oz Copper, t ≤ 10s

**Typical Performance Characteristics**

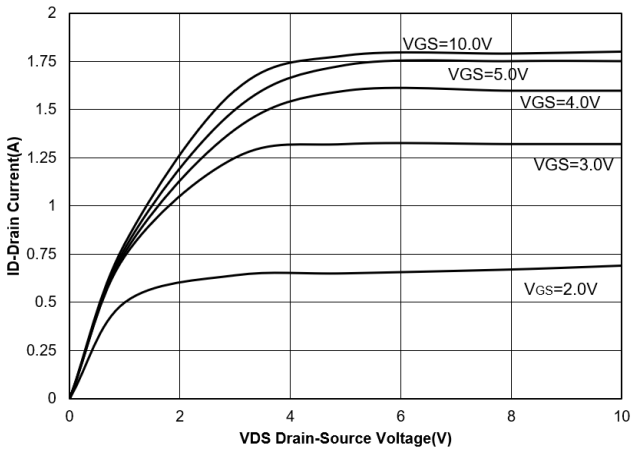


Figure 1. Output Characteristics

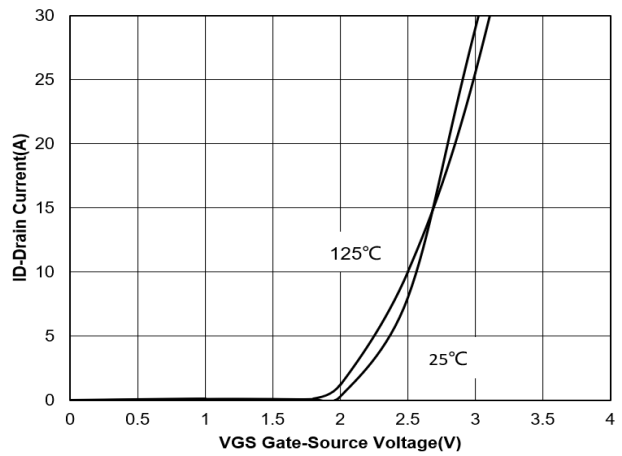


Figure 2. Transfer Characteristics

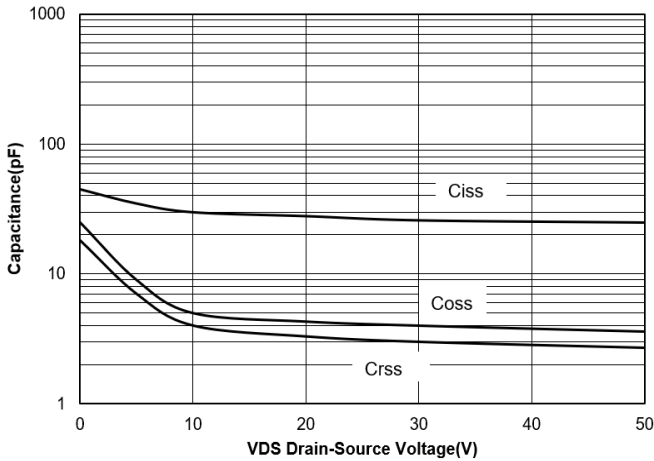


Figure 3. Capacitance Characteristics

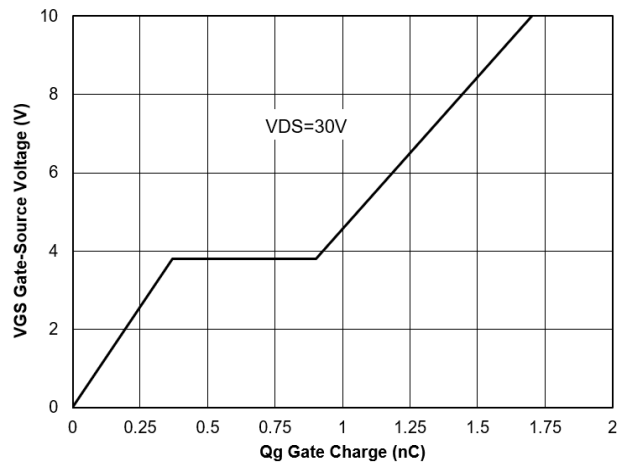


Figure 4. Gate Charge

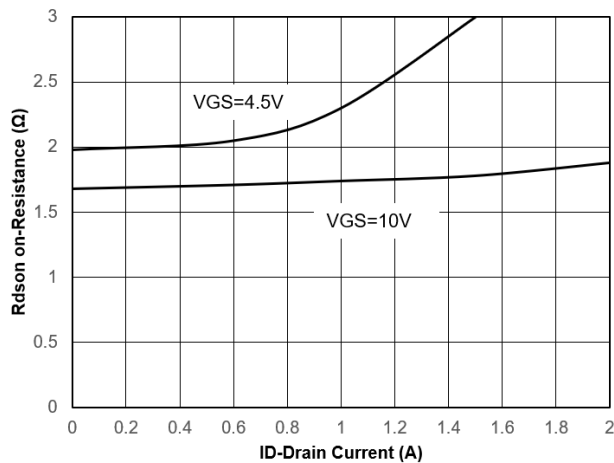


Figure 5. Drain-Source on Resistance

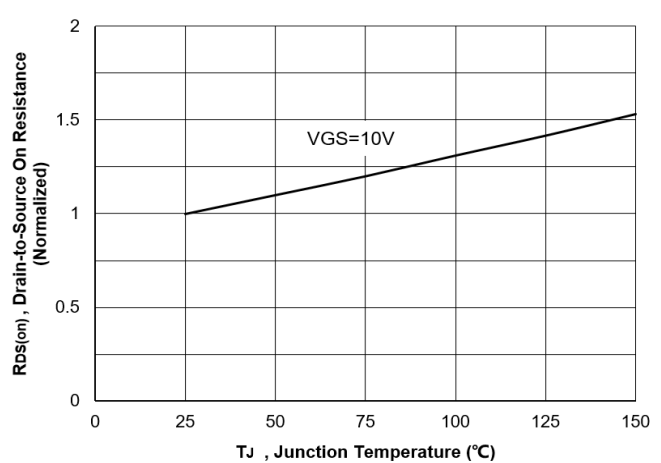


Figure 6. Normalized On-Resistance Vs. Temperature

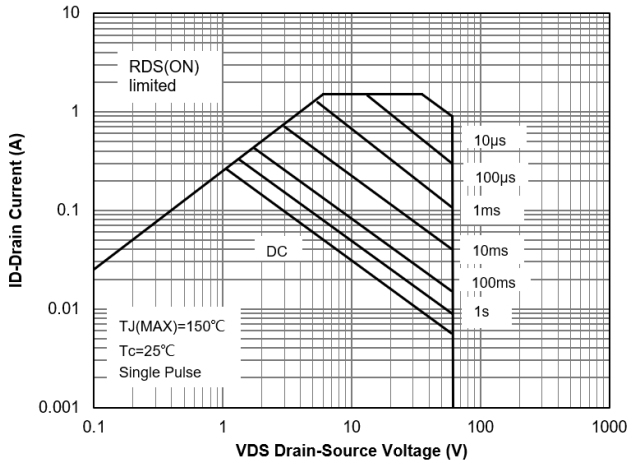


Figure 7. Safe Operation Area

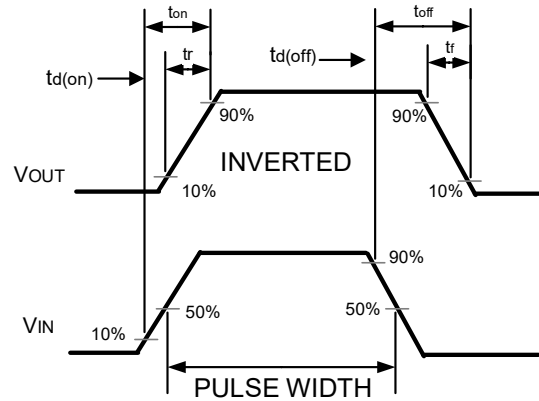


Figure 8. Switching wave

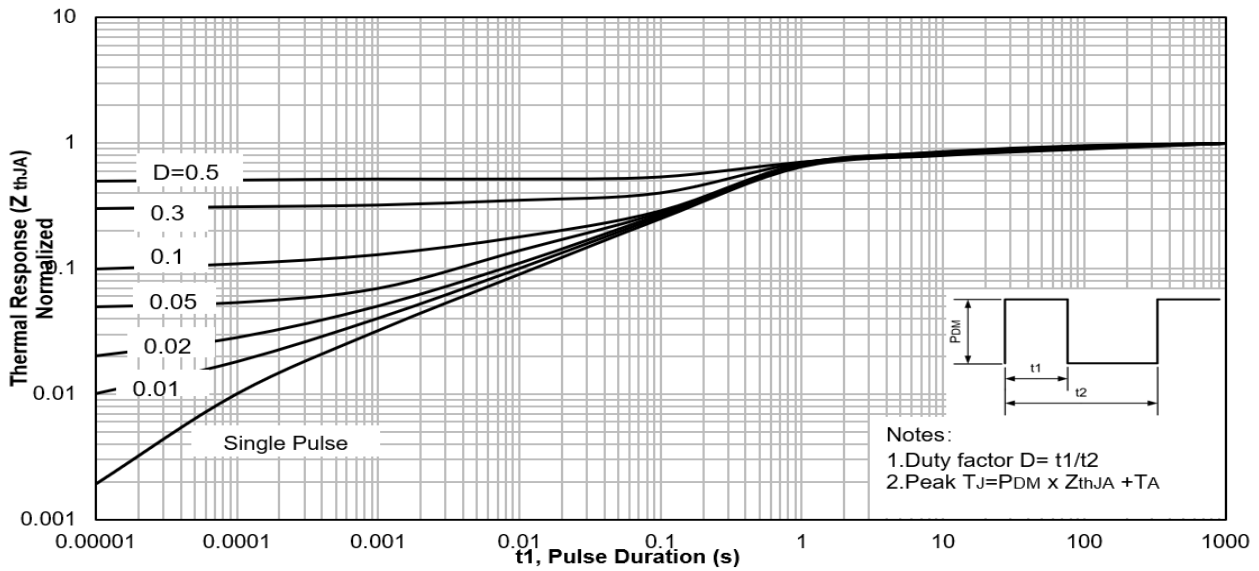
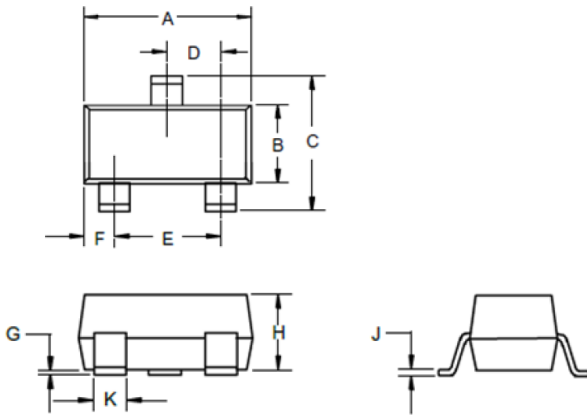


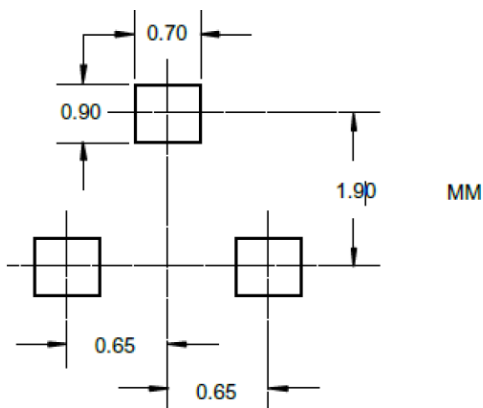
Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

### SOT-323 Package Outline Drawing



SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.80	2.20	0.071	0.087
B	1.15	1.35	0.045	0.053
C	2.10	2.45	0.083	0.096
D	0.65 Nominal		0.025 Nominal	
E	1.20	1.40	0.047	0.055
F	0.30	0.40	0.012	0.016
G	0.00	0.10	0.000	0.004
H	0.90	1.00	0.035	0.039
J	0.10	0.25	0.004	0.010
K	0.15	0.40	0.006	0.016

### Suggested Land Pattern



### Contact Information

Applied Power Microelectronics Inc.

Website: <http://www.appliedpowermicro.com>

Email: [sales@appliedpowermicro.com](mailto:sales@appliedpowermicro.com)

Phone: +86 (0519) 8399 3606