

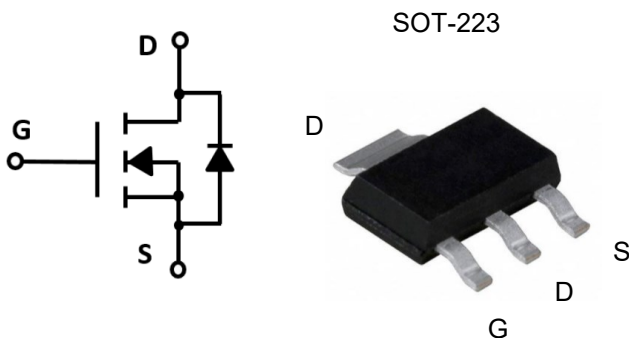
### Description

The CMN10020GT3 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

- VDS: 100V
- ID : 6.9A
- RDS<sub>ON</sub> (@VGS=10V) : < 26.5mΩ
- RDS<sub>ON</sub> (@VGS=4.5V) : < 33mΩ
- High density cell design for extremely low RDS<sub>ON</sub>
- Excellent on-resistance and DC current capability

### Equivalent Circuit and Pin Configuration



### Applications

- AC/DC load switch
- SMPS
- LED power

### Marking Information



Marking Code = CMN10020GT3

Date Code = XXXX

### Ordering Information

Part Number	Packaging	Remark
CMN10020GT3	2500/Tape & Reel	ROHS

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	V <sub>DS</sub>	100	V
Gate-source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	TA=25°C	6.9
		TA=70°C	4.4
Pulsed Drain Current <sup>(1)</sup>	I <sub>DM</sub>	27.6	A
Total Power Dissipation <sup>(2)</sup>	P <sub>D</sub> @ TA=25°C	2.2	W
	Derating Factor above 25°C	0.02	W/°C
Thermal Resistance Junction-to-Ambient <sup>(2)</sup>	R <sub>θJA</sub>	55	°C/W
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BVDSS	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, 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			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		3.0	V
Static Drain-Source on-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =6.9A		22	26.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.5A		25	33	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =6.9A, V <sub>GS</sub> =0V			1.3	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				6.9	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHz		1180		pF
Output Capacitance	C <sub>oss</sub>			400		
Reverse Transfer Capacitance	C <sub>rss</sub>			11		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =6.9A		18		nC
Gate Source Charge	Q <sub>gs</sub>			4		
Gate Drain Charge	Q <sub>gd</sub>			4.2		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V, I <sub>D</sub> =6.9A, R <sub>GEN</sub> =2.2Ω		28		ns
Turn-on Rise Time	t <sub>r</sub>			12.2		
Turn-off Delay Time	t <sub>D(off)</sub>			39		
Turn-off Fall Time	t <sub>f</sub>			8.9		

Noted: (1) Pulse Test: Pulse Width ≤ 300us, 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**

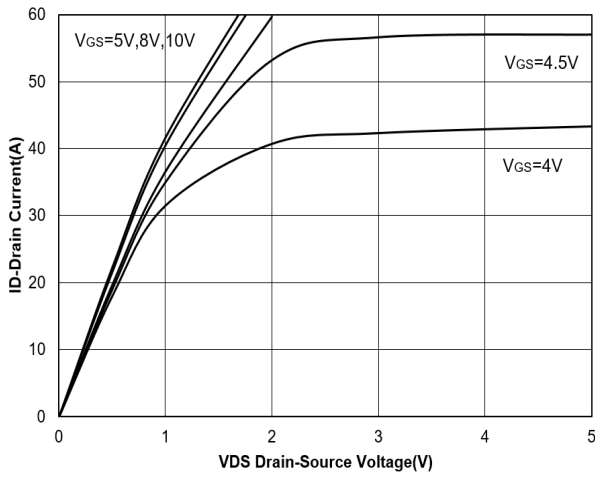


Figure 1. Output Characteristics

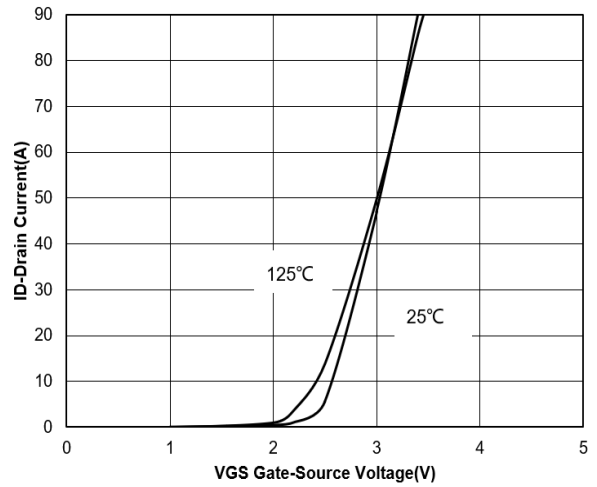


Figure 2. Transfer Characteristics

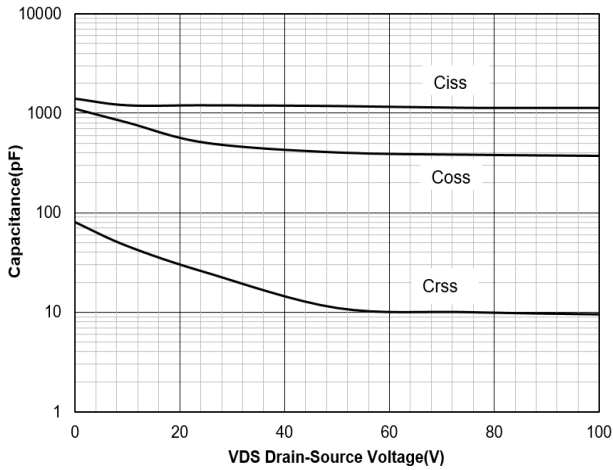


Figure 3. Capacitance Characteristics

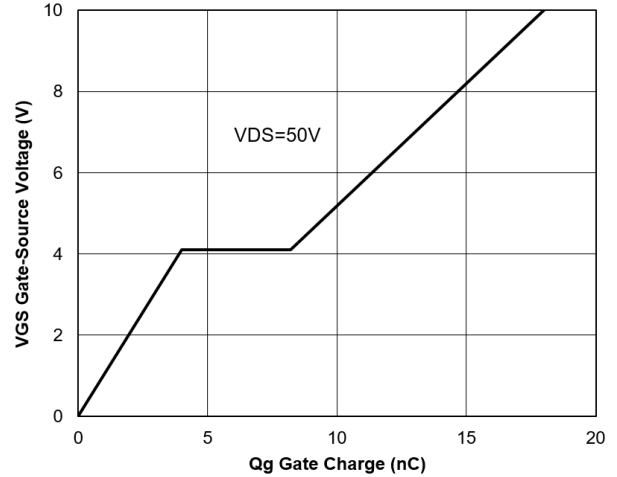


Figure 4. Gate Charge

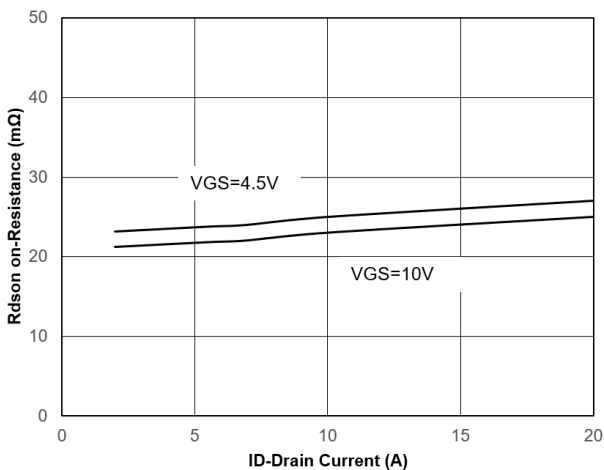


Figure 5. Drain-Source on Resistance

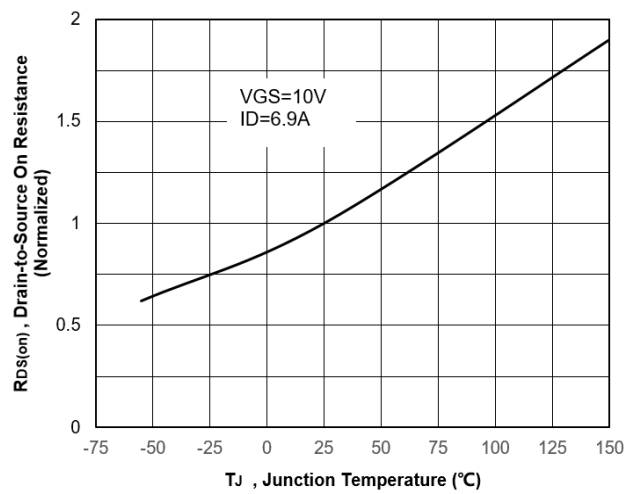


Figure 6. Normalized On-Resistance Vs. Temperature

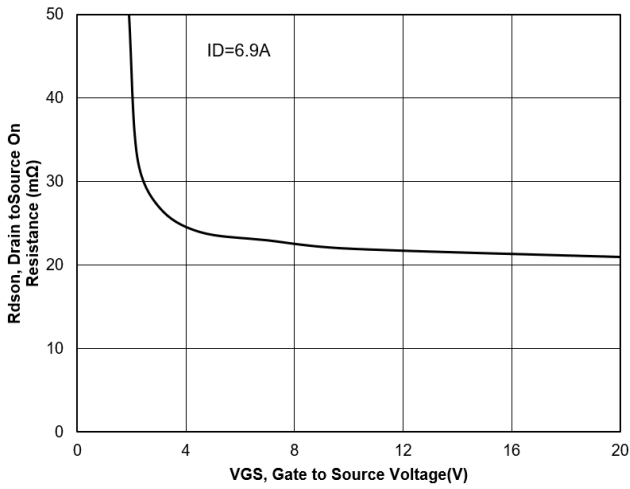


Figure 7. Typical Drain to Source ON Resistance VS Gate Voltage and Drain Current

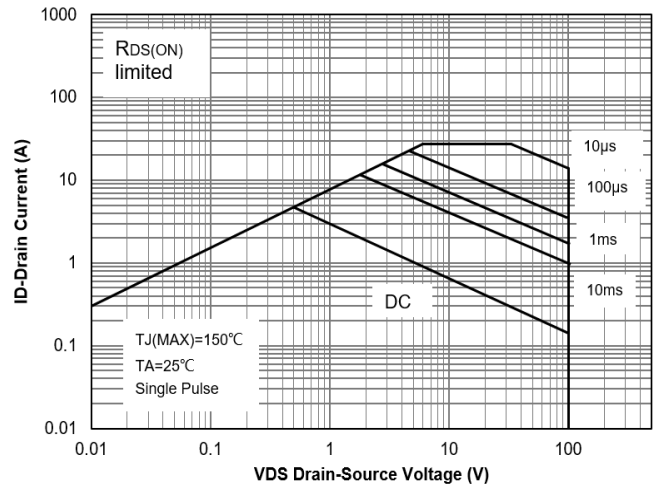


Figure 8. Safe Operation Area

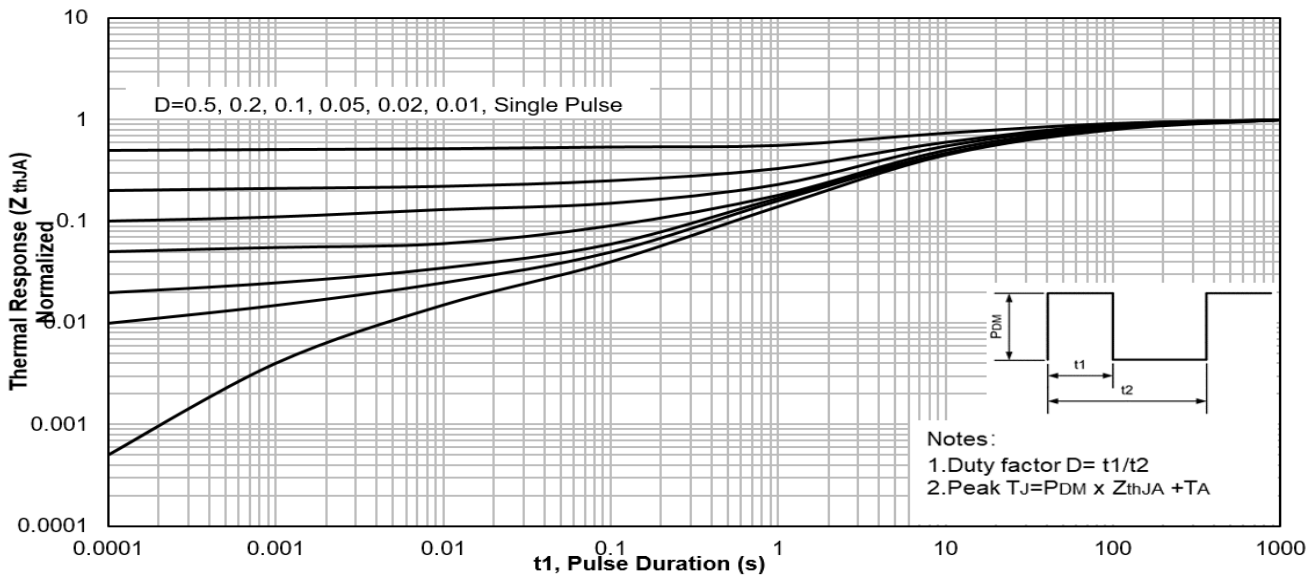


Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

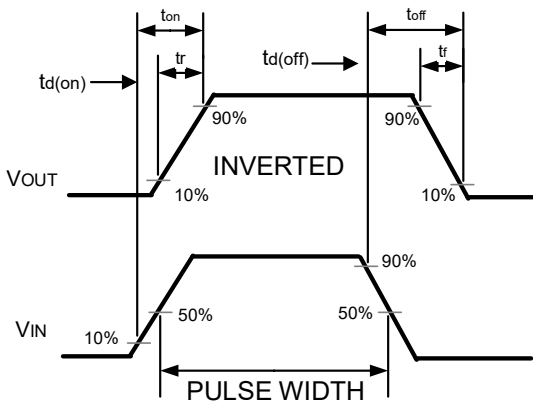
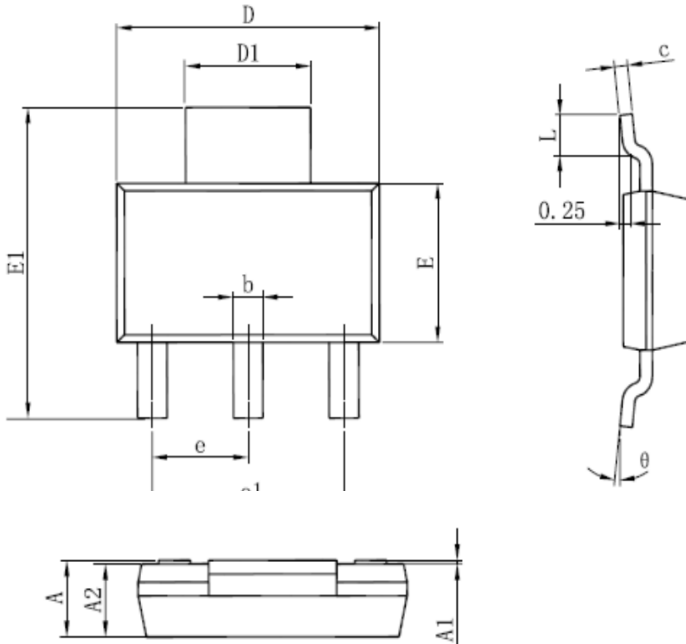


Figure 10. Switching wave

**SOT-223 Package Outline Drawing**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
theta	0°	10°	0°	10°

**Contact Information**

Applied Power Microelectronics Inc.

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

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

Phone: +86 (0519) 8399 3606