

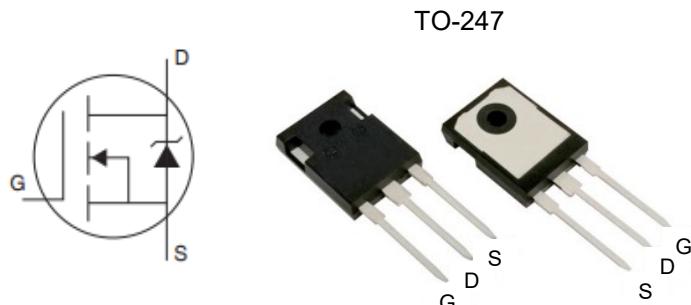
## Description

The CMN6505SZ is the N-Channel enhancement mode power field effect transistors with high cell density, high voltage planar technology. This high density process and design have been optimized switching performance and especially tailored to minimize on-state resistance.

## Features

- V<sub>DS</sub>: 65V
- I<sub>D</sub>: 70A
- R<sub>DSON</sub> (@V<sub>GS</sub>=10V) : < 6mΩ
- High density cell design for extremely low R<sub>DSON</sub>
- 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



Marking Code = 60R085Z

Date Code = XXXX

## Ordering Information

P/N	Package Type	Packaging
CMN6505SZ	TO-247	Tube

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	V <sub>DS</sub>	65	V
Gate-source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current ( <sup>1</sup> )	T <sub>C</sub> =25°C	152	A
		70	
		70	
Pulsed Drain Current <sup>(2)</sup>	I <sub>DM</sub>	609	A
Total Power Dissipation <sup>(3)</sup>	P <sub>D</sub> @ T <sub>C</sub> =25°C	250	W
	Derating Factor above 25°C	2.0	W/°C
Thermal Resistance Junction-to-Solder Case <sup>(3)</sup>	R <sub>θJC</sub>	0.5	°C/W
Junction and Storage Temperature Range	T <sub>J,TSTG</sub>	-55 to +150	°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	BVDSS	V <sub>GS</sub> =0V, I <sub>D</sub> =250µA	65			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>D</sub> S=65V, 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>D</sub> S=0V			±100	nA
Gate Threshold Voltage	V <sub>GS</sub> (th)	V <sub>D</sub> S=V <sub>GS</sub> , I <sub>D</sub> =250µA	2		4	V
Static Drain-Source on-Resistance	R <sub>D</sub> S(on)	V <sub>GS</sub> =10V, I <sub>D</sub> =70A		5	6	mΩ
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =70A, V <sub>GS</sub> =0V		0.9	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				70	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>D</sub> S=25V, V <sub>GS</sub> =0V, f=1.0MHz		5570		pF
Output Capacitance	C <sub>oss</sub>			315		
Reverse Transfer Capacitance	C <sub>rss</sub>			295		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>D</sub> S=48V, I <sub>D</sub> =130A		100		nC
Gate Source Charge	Q <sub>gs</sub>			25		
Gate Drain Charge	Q <sub>gd</sub>			35		
Turn-on Delay Time	t <sub>D</sub> (on)	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, I <sub>D</sub> =130A, R <sub>GEN</sub> =4.3Ω		223		ns
Turn-on Rise Time	t <sub>r</sub>			197		
Turn-off Delay Time	t <sub>D</sub> (off)			240		
Turn-off Fall Time	t <sub>f</sub>			130		

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

(2) Pulse width limited by maximum junction temperature

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

## Typical Performance Characteristics

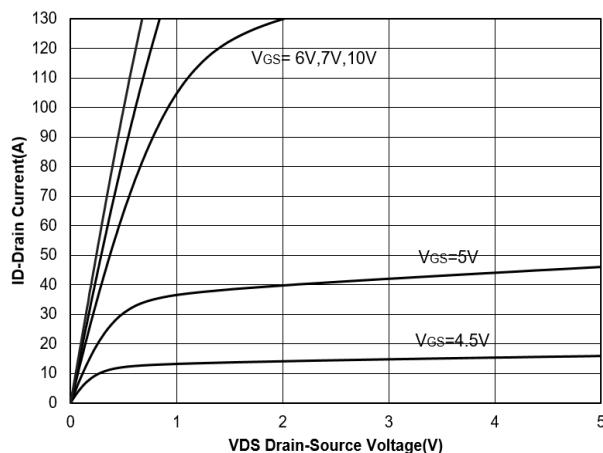


Figure 1. Output Characteristics

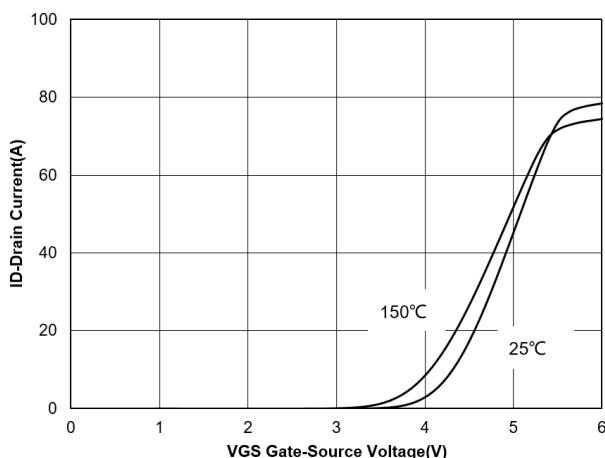


Figure 2. Transfer Characteristics

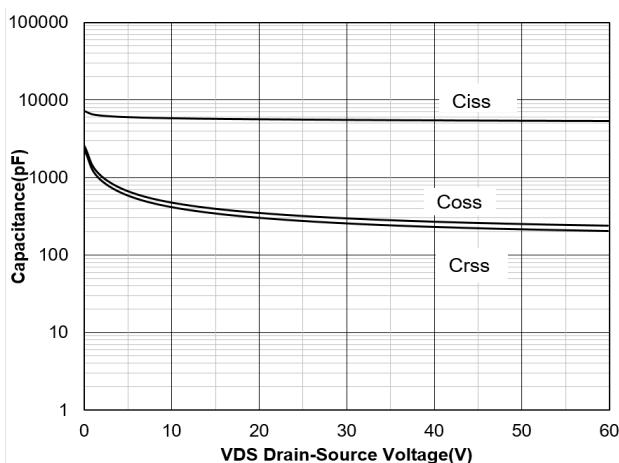


Figure 3. Capacitance Characteristics

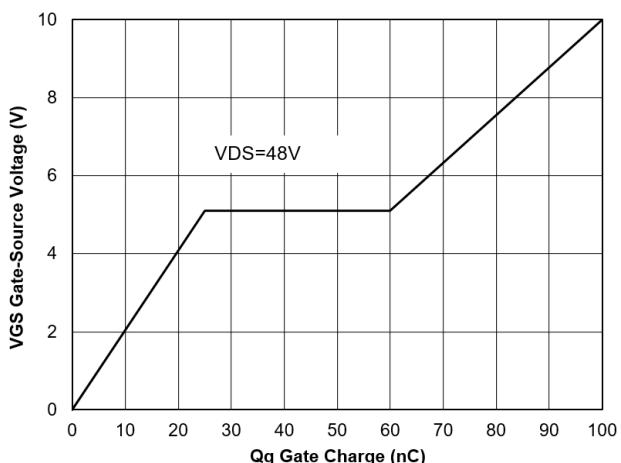


Figure 4. Gate Charge

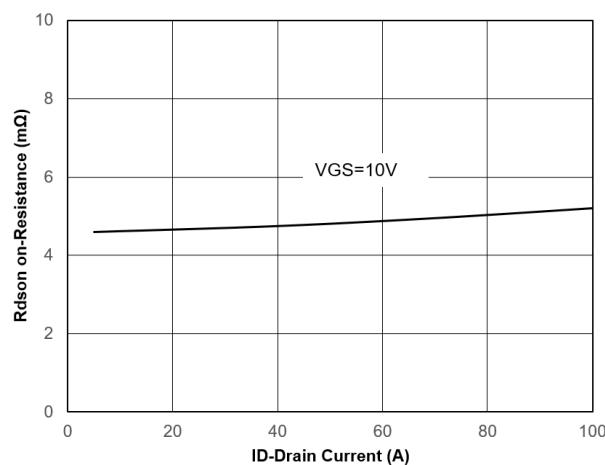


Figure 5. Drain-Source on Resistance

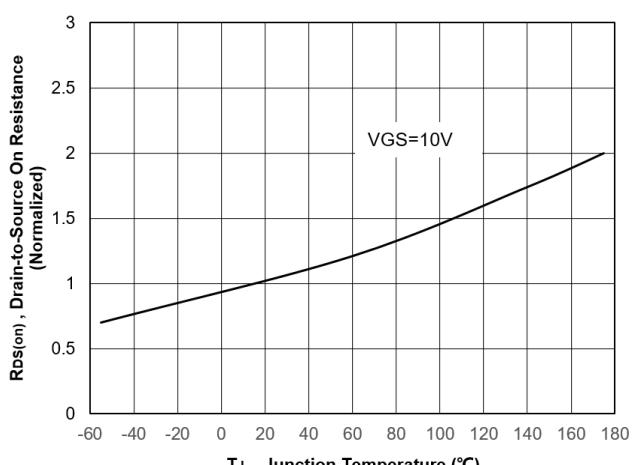


Figure 6. Normalized On-Resistance Vs. Temperature

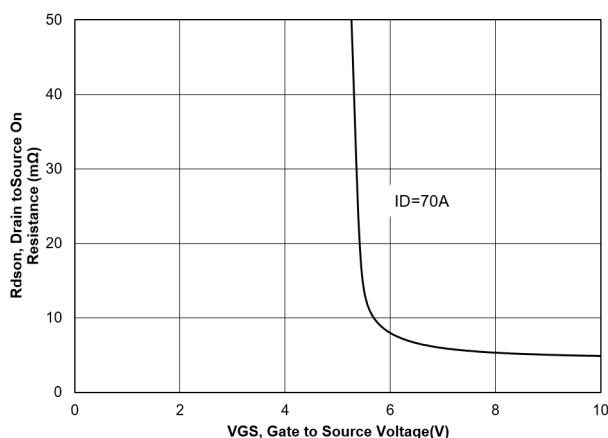


Figure 7. Typical Drain to Source ON Resistance  
VS Gate Voltage and Drain Current

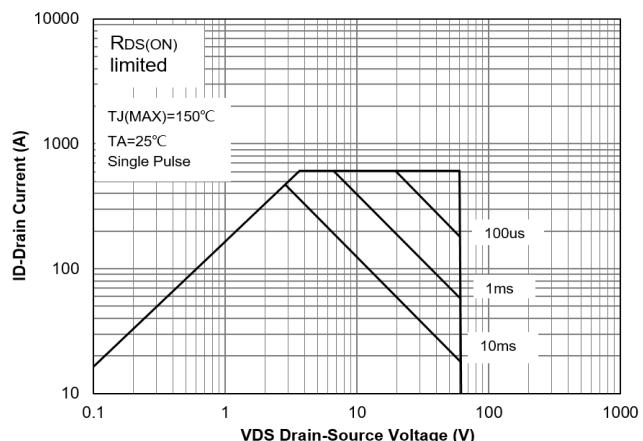


Figure 8. Safe Operation Area

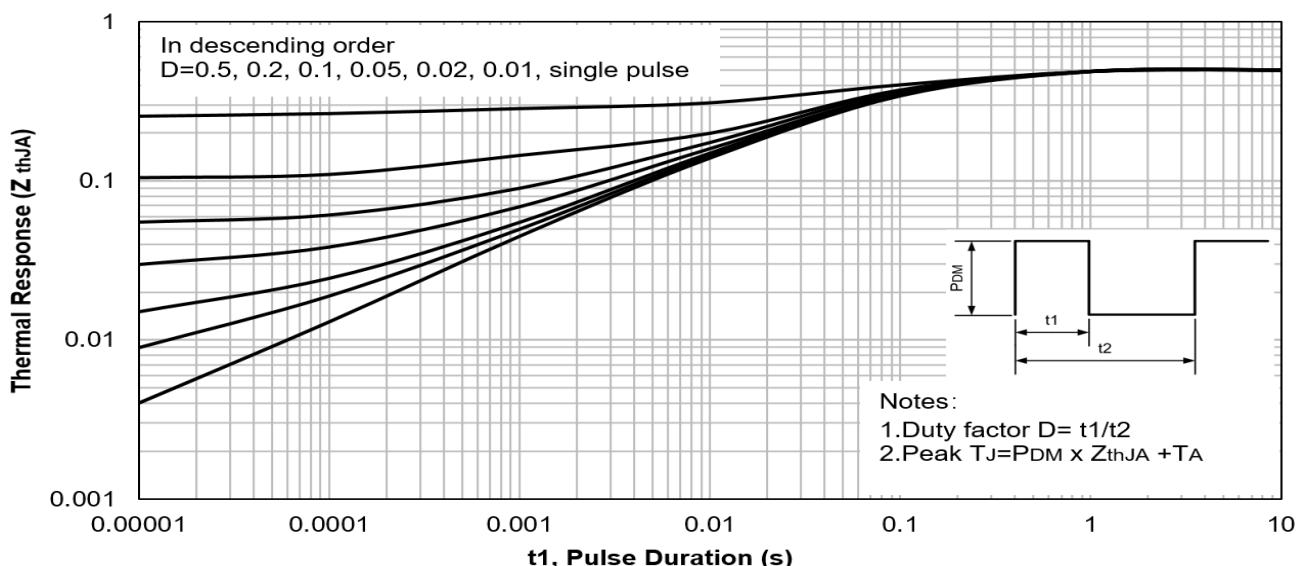


Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Case

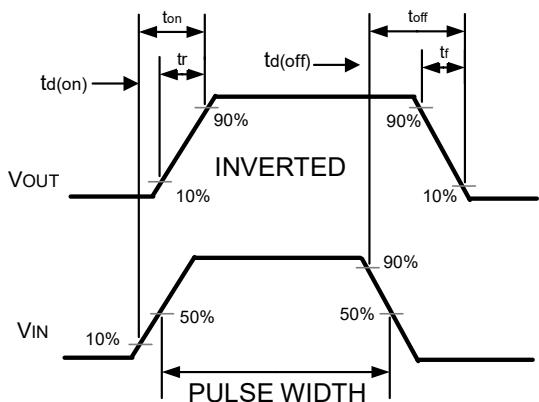
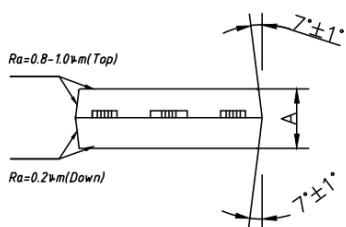
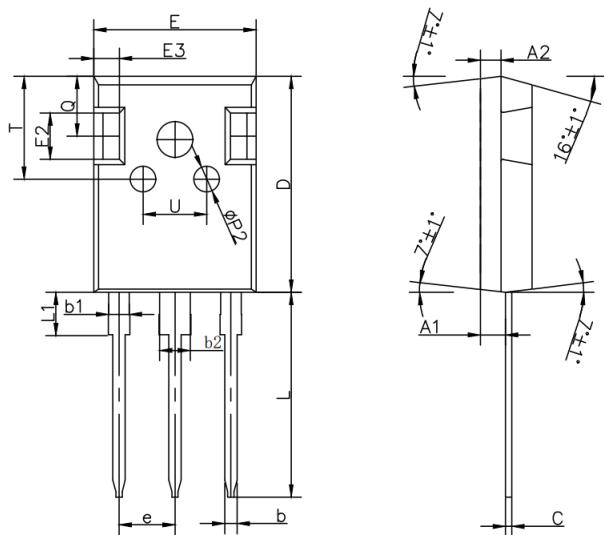


Figure 10. Switching wave

## TO-247 Package Outline Drawing



SYMBOL	MM		
	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.43	2.51
A2	1.90	2.00	2.10
b	1.16	1.20	1.26
b1	1.96	2.00	2.06
b2	2.96	3.00	3.06
b3	-	-	2.25
b4	-	-	3.25
c	0.59	0.60	0.66
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.70	15.80	15.90
E1	13.10	13.26	13.50
E2	4.40	4.50	4.60
E3	2.40	2.50	2.60
e	5.436BSC		
L	19.80	19.90	20.10
L1	-	-	4.30
M	0.35	0.89	0.95
P	3.40	3.50	3.60
P1	7.00	7.20	7.40
P2	2.40	2.50	2.60
Q	5.60	5.80	6.00
S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	6.20	6.40

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