

Description

The CMP3007F3 is the P-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.

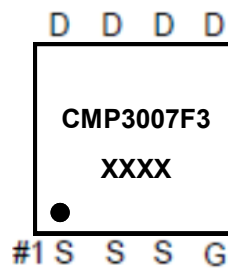
Features

- V_{DS} : -30V
- I_D : -47A
- $R_{DS(on)}$ (@ $V_{GS}=-10V$): < 6.2m Ω
- $R_{DS(on)}$ (@ $V_{GS}=-4.5V$): < 11m Ω
- High density cell design for extremely low $R_{DS(on)}$
- Excellent on-resistance and DC current capability

Applications

- Battery management
- Power management
- Load switch

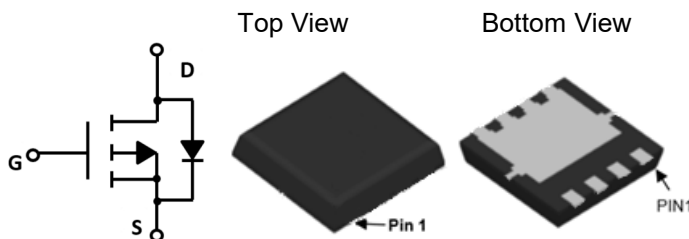
Marking Information



Marking Code = CMP3007F3

Date Code = XXXX

Equivalent Circuit and Pin Configuration



Ordering Information

Part Number	Packaging	Reel Size
CMP3007F3	5000/Tape & Reel	13 inch

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

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-30	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current ⁽¹⁾⁽⁶⁾	$T_C=25^\circ C$	I_D	-47	A
	$T_C=100^\circ C$		-30	A
	$T_A=25^\circ C$	I_D	-18	A
	$T_A=100^\circ C$		-11	A
Pulsed Drain Current ⁽³⁾		I_{DM}	-188	A
Total Power Dissipation ⁽⁴⁾	$T_C=25^\circ C$	P_D	21	W
	$T_A=25^\circ C$		3	W
Thermal Resistance Junction-to-Ambient ⁽²⁾⁽⁵⁾		$R_{\theta JA}$	40	$^\circ C/W$
Thermal Resistance Junction-to-Case		$R_{\theta Jc}$	6	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$

Electrical Characteristics (T_J=25 °C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BVDSS	V _{GS} =0V, I _D =-250μA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V, T _C =25°C			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0		-3.0	V
Static Drain-Source on-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-15A		5.0	6.2	mΩ
		V _{GS} =-4.5V, I _D =-10A		6.9	11	
Diode Forward Voltage	V _{SD}	I _S =-15A, V _{GS} =0V			-1.2	V
Maximum Body-Diode Continuous Current	I _S				-47	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz		6450		pF
Output Capacitance	C _{oss}			780		
Reverse Transfer Capacitance	C _{rss}			475		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-15V, I _D =-20A		112		nC
Gate Source Charge	Q _{gs}			21		
Gate Drain Charge	Q _{gd}			23		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-15V, RL=0.75Ω, R _{GEN} =3Ω		15		ns
Turn-on Rise Time	t _r			79		
Turn-off Delay Time	t _{D(off)}			136		
Turn-off Fall Time	t _f			80		

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

- (2) The value of R_{θJA} is measured with the device mounted on lin2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C. The Power dissipation PDSM is based on R_{θJA} t ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
- (3) Single pulse width limited by junction temperature T_{J(MAX)} = 150°C.
- (4) The power dissipation PD is based on T_{J(MAX)} = 150°C, using junction-to-case thermal resistance, and is more useful in setting the upper Dissipation limit for cases where additional heatsinking is used.
- (5) The R_{θJA} is the sum of the thermal impedance from junction to case R_{θJA} and case to ambient.
- (6) The maximum current rating is package limited.

Typical Performance Characteristics

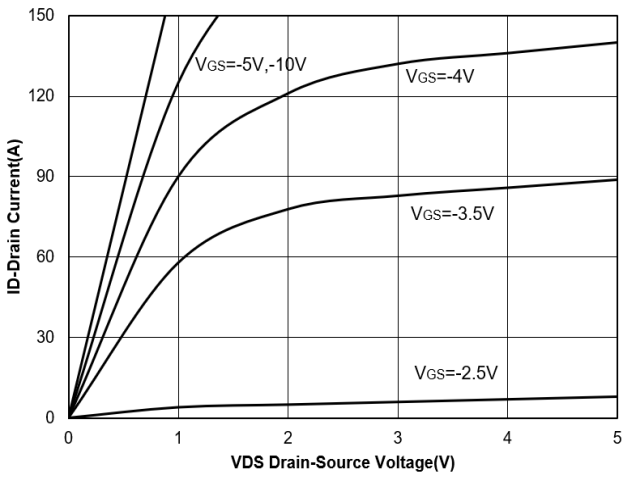


Figure 1. Output Characteristics

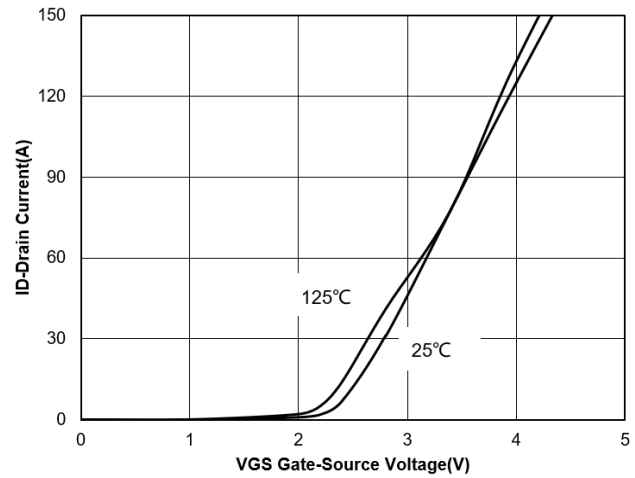


Figure 2. Transfer Characteristics

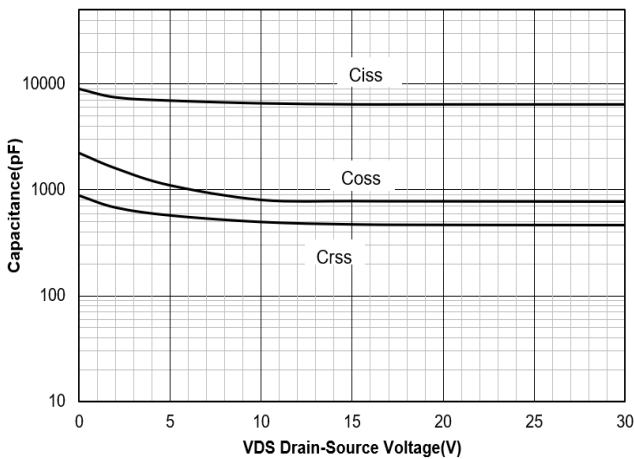


Figure 3. Capacitance Characteristics

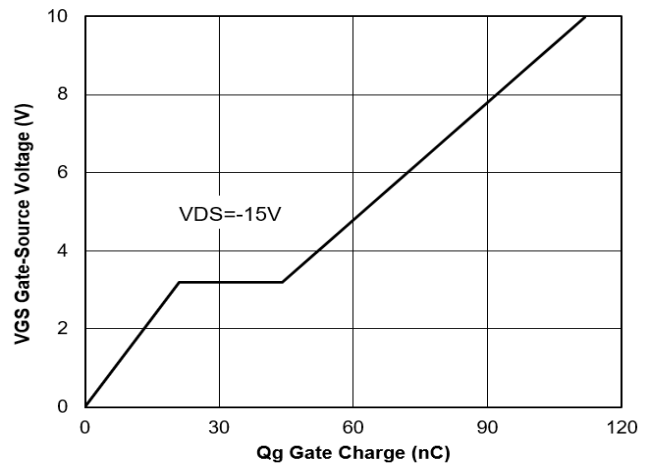


Figure 4. Gate Charge

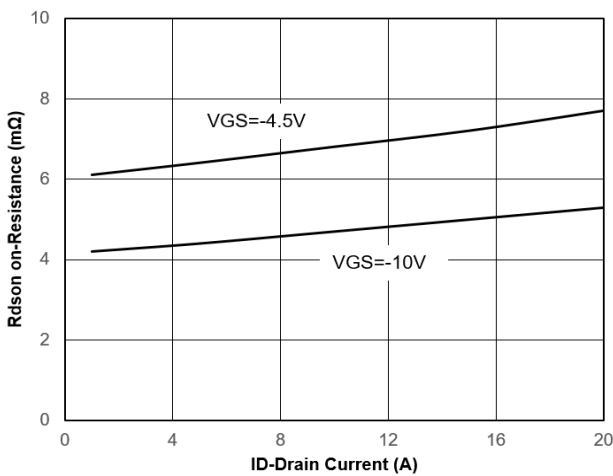


Figure 5. Drain-Source on Resistance

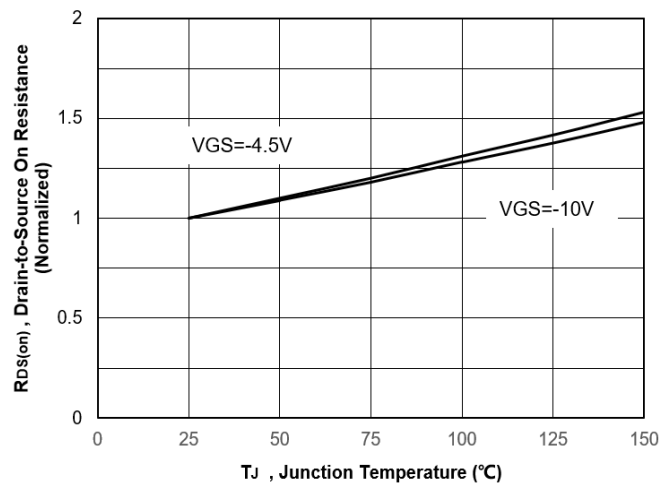


Figure 6. Normalized On-Resistance

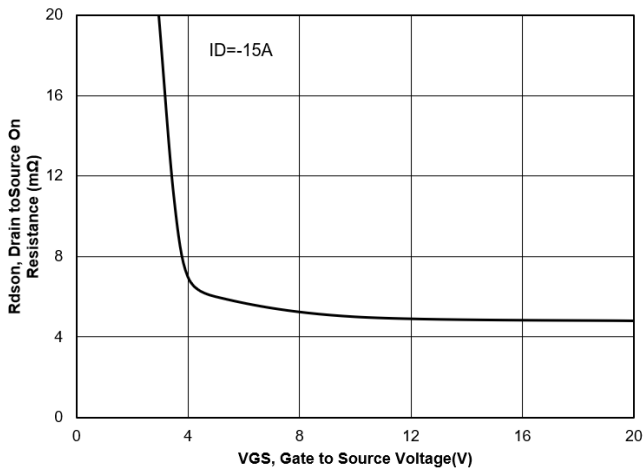


Figure 7. Typical Drain to Source ON Resistance VS Gate Voltage and Drain Current

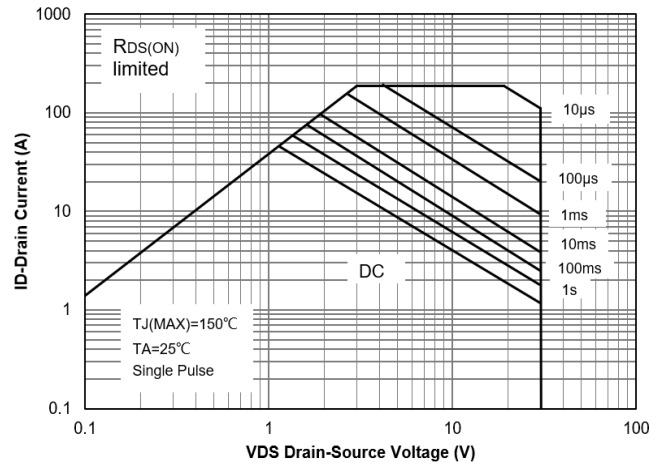


Figure 8. Safe Operation Area

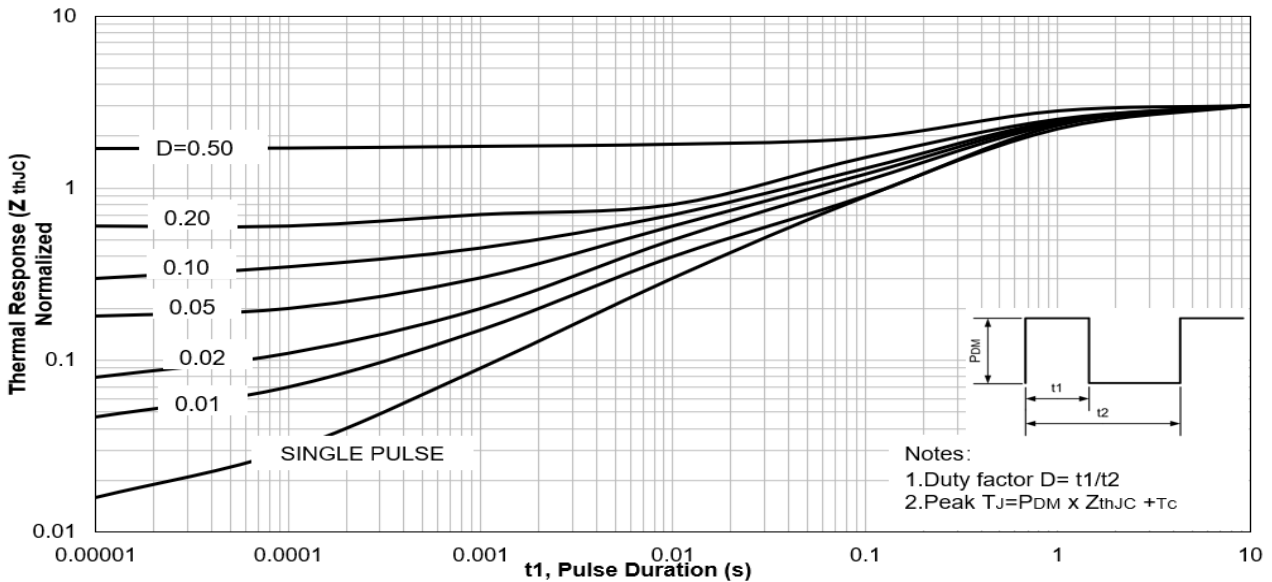


Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case

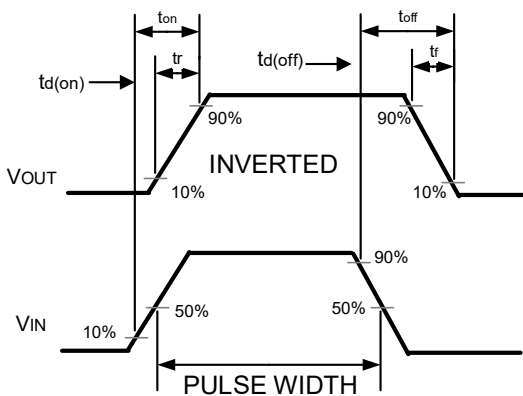
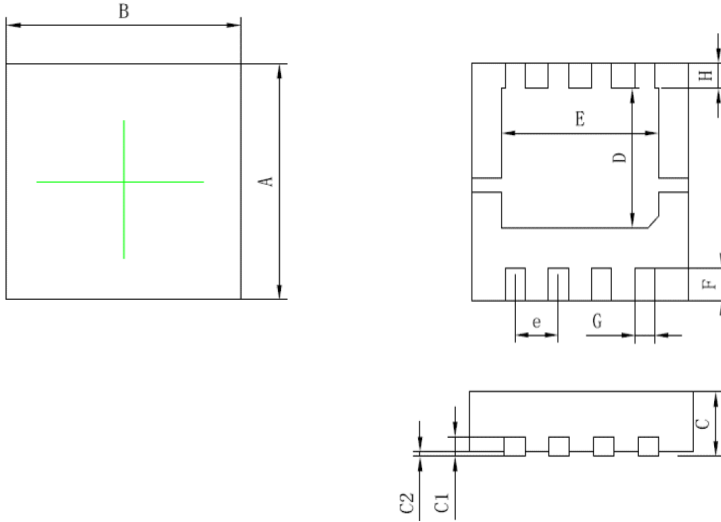


Figure 10. Switching wave

DFN 3.3x3.3 Package Outline Drawing


Symbol	Millimeters	
	Min.	Max.
A	3.20	3.30
B	3.20	3.30
C	0.75	0.85
C1	0.18	0.22
C2	--	0.05
D	1.80	2.00
E	2.20	2.50
F	0.40	0.50
G	0.25	0.35
H	0.30	0.40
e	0.60	0.70