

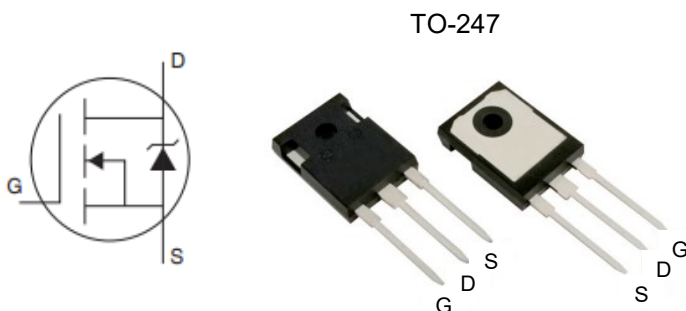
Description

The CM60R030FZ is the N-Channel enhancement mode power field effect transistors with high cell density, high voltage Super Junction technology. This high density process and design have been optimized switching performance and especially tailored to minimize on-state resistance.

Features

- VDS: 600V
- ID (@VGS=10V): 83A
- RDS_{ON} (@VGS=10V) : < 36mΩ
- High density cell design for extremely low RDS_{ON}
- Excellent on-resistance and DC current capability

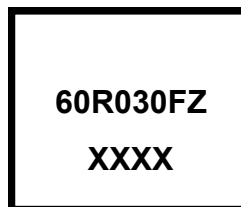
Equivalent Circuit and Pin Configuration



Applications

- AC/DC load switch
- SMPS
- LED power
- PC power
- Telecom power
- Server power
- EV Charger
- Motor driver

Marking Information



Marking Code = 60R030FZ

Date Code = XXXX

Ordering Information

P/N	Package Type	Packaging
CM60R030FZ	TO-247	Tube

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

Parameter	Symbol	Maximum	Unit	
Drain-source Voltage	V _{DS}	600	V	
Gate-source Voltage	V _{GS}	±30	V	
Continuous Drain Current ⁽¹⁾	I _D	T _c =25°C	83	A
		T _c =100°C	51	A
Pulsed Drain Current ⁽²⁾	I _{DM}	330	A	
Total Power Dissipation ⁽³⁾	P _D @ T _c =25°C	595	W	
	Derating Factor above 25°C	4.76	W/°C	
Thermal Resistance Junction-to-Case ⁽³⁾	R _{θJC}	0.021	°C/W	
Thermal Resistance Junction-to-Ambient ⁽³⁾	R _{θJA}	40	°C/W	
Junction and Storage Temperature Range	T _J ,T _{STG}	-55 to +150	°C	

Electrical Characteristics (T_c=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	600			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =600V, V _{GS} =0V, T _C =25°C			5	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3		5	V
Static Drain-Source on-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =40A		28	36	mΩ
Diode Forward Voltage	V _{SD}	I _S =40A, V _{GS} =0V		1	1.2	V
Maximum Body-Diode Continuous Current	I _S				83	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =400V, V _{GS} =0V, f=1MHz		7600		pF
Output Capacitance	C _{oss}			112		
Reverse Transfer Capacitance	C _{rss}			4		
Switching Parameters						
Total Gate Charge	Q _g	V _{DS} =40V, I _D =30A, V _{GS} =10V		152		nC
Gate Source Charge	Q _{gs}			42		
Gate Drain Charge	Q _{gd}			56		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _D =10A, R _{GEN} =3.3Ω		162		ns
Turn-on Rise Time	t _r			145		
Turn-off Delay Time	t _{D(off)}			182		
Turn-off Fall Time	t _f			78		

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

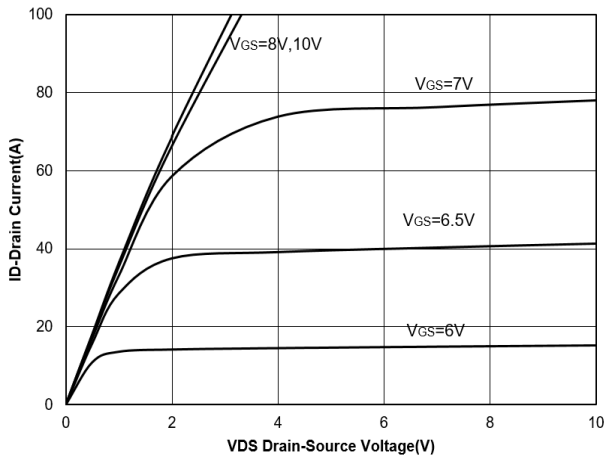


Figure 1. Output Characteristics

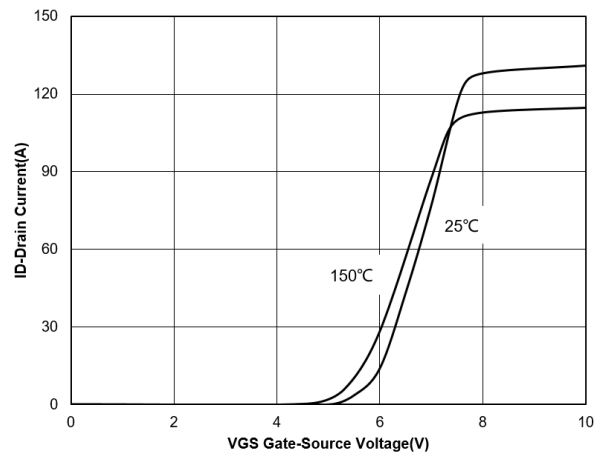


Figure 2. Transfer Characteristics

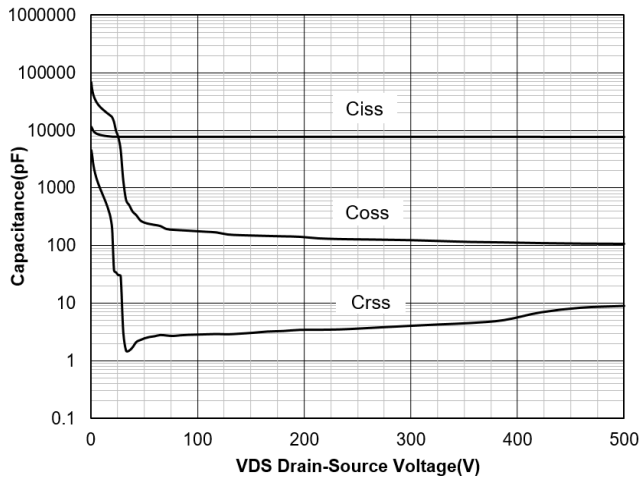


Figure 3. Capacitance Characteristics

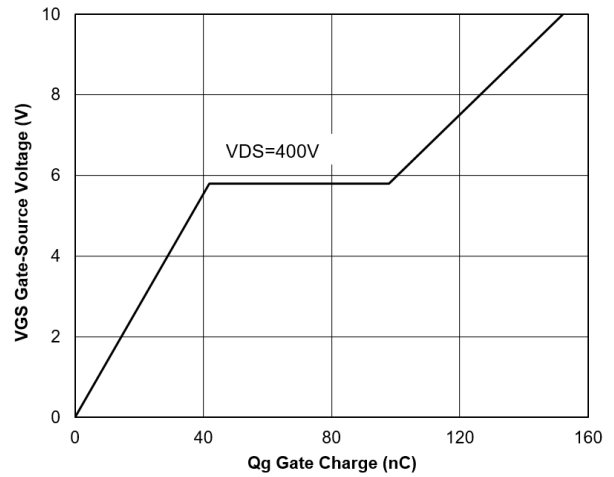


Figure 4. Gate Charge

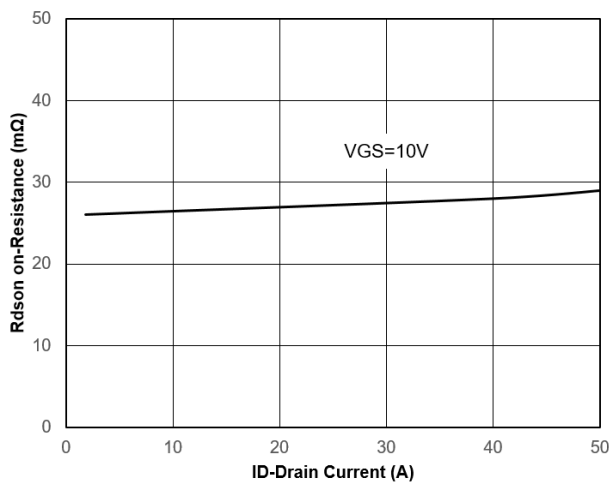


Figure 5. Drain-Source on Resistance

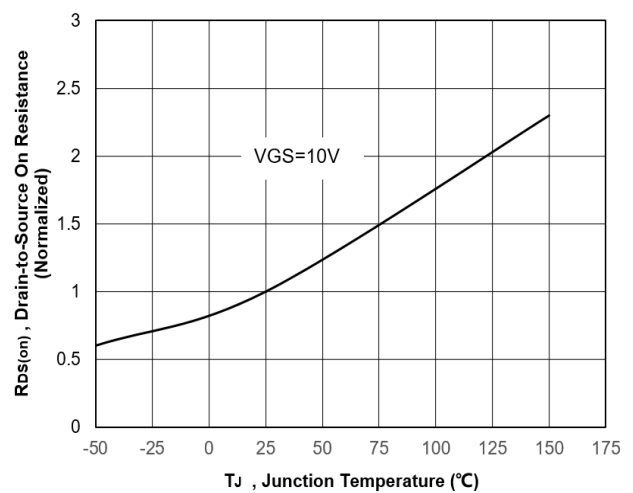


Figure 6. Normalized On-Resistance Vs. Temperature

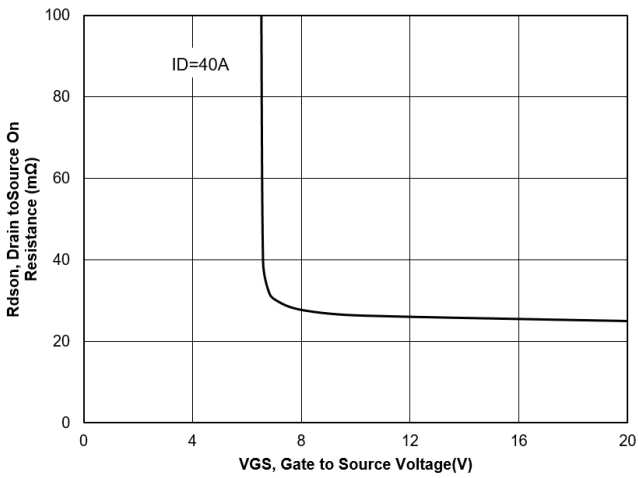


Figure 7. Typical Drain to Source ON Resistance VS Gate Voltage and Drain Current

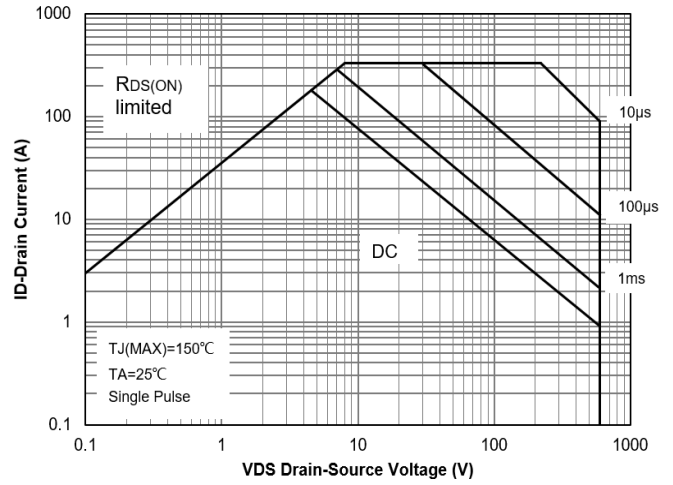


Figure 9. Safe Operation Area

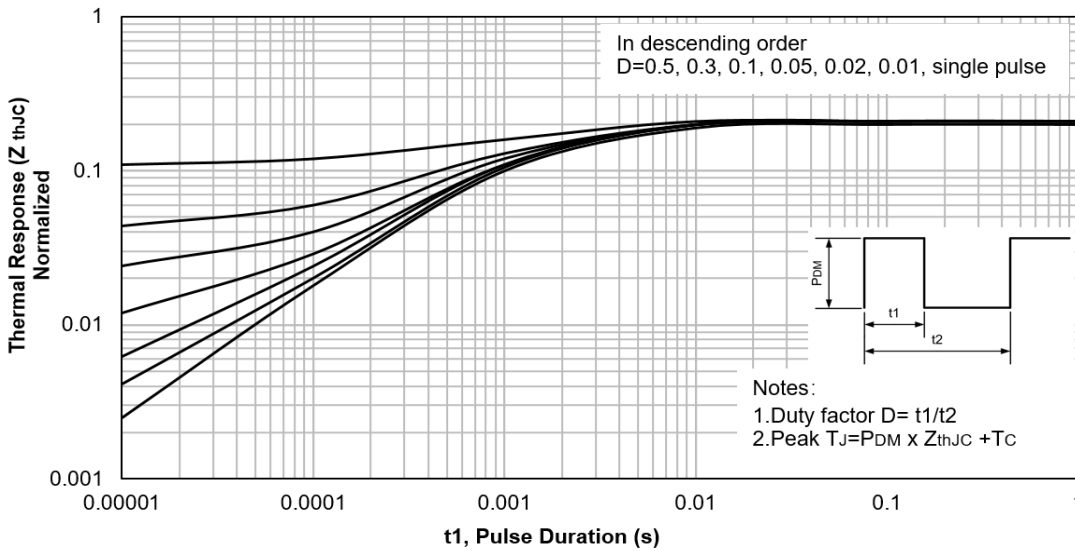


Figure 10. Maximum Effective Transient Thermal Impedance ,Junction-to-Case

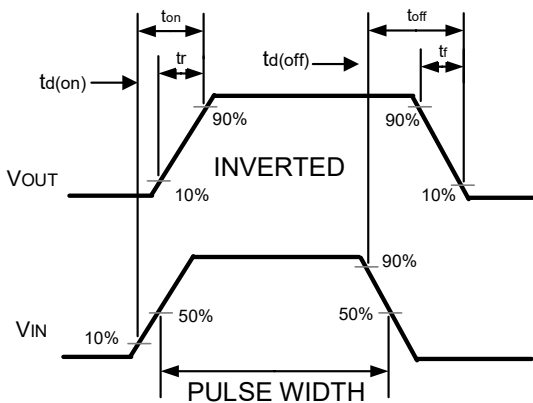
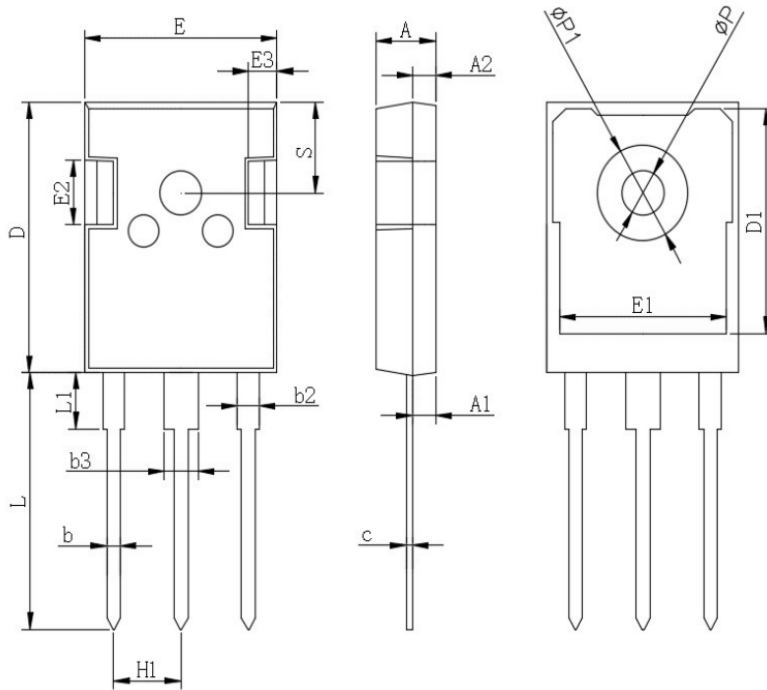


Figure 10. Switching wave

TO-247 Package Outline Drawing


TO-247AB		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.0	1.4
b2	1.91	2.21
C	0.5	0.7
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.0	13.6
E2	4.80	5.20
E3	2.30	2.70
L	19.62	20.22
L1	-	4.30
ΦP	3.40	3.80
ΦP1	-	7.30
S	6.15TYP	
H1	5.44TYP	
b3	2.80	3.20