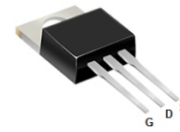


CMS80N06-HF

**N-Channel
RoHS Device
Halogen Free**

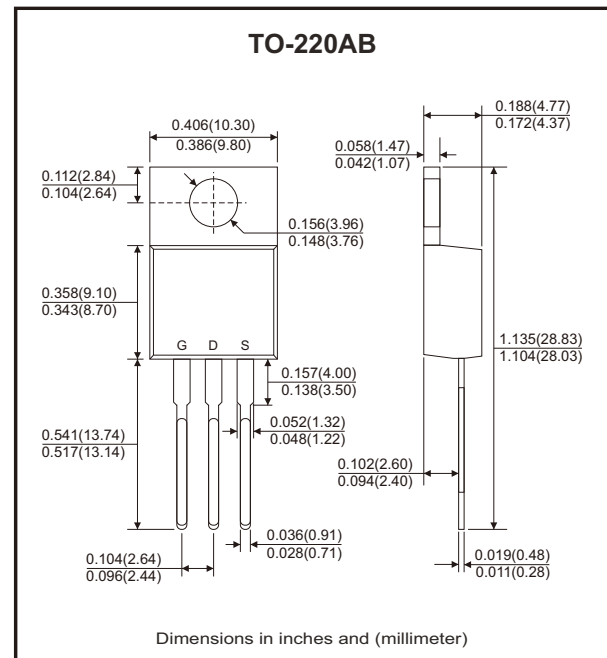


Features

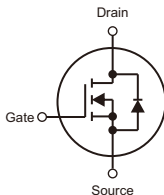
- Super low gate charge.
- Green device available.
- Excellent C_{dv}/dt effect decline.
- Advanced high cell density trench technology.

Mechanical data

- Case: TO-220AB, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin-plated leads, solderability per MIL-STD-202, method 208.



Circuit Diagram



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	60	V
Gate-source voltage	V_{GSS}	±20	V
Continuous drain current <small>(T_c=25°C) (Note 1)</small>	I_D	80	A
Continuous drain current <small>(T_c=100°C) (Note 1)</small>	I_D	52	
Pulsed drain current <small>(Note 2)</small>	I_{DM}	320	A
Single pulse avalanche energy <small>(Note 3)</small>	E_{AS}	130	mJ
Power dissipation <small>(T_c=25°C)</small>	P_D	112	W
Thermal resistance junction to air <small>(Note 1)</small>	$R_{\theta JA}$	52	°C/W
Thermal resistance junction to case <small>(Note 1)</small>	$R_{\theta JC}$	1.33	°C/W
Operating junction temperature range	T_J	-55 to +175	°C
Storage temperature range	T_{STG}	-55 to +175	°C

Electrical Characteristics (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics						
Static drain-source on-resistance (Note 2)	R _{DS(on)}	V _{GS} = 10V, I _D = 30A		6	8	mΩ
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		4570		pF
Output capacitance	C _{oss}			302		
Reverse transfer capacitance	C _{rss}			291		
Switching Characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} = 30V, I _D = 30A V _{GS} = 10V, R _G = 1.8Ω		9		ns
Turn-on rise time	t _r			7		
Turn-off delay time	t _{d(off)}			40		
Turn-off fall time	t _f			15		
Total gate charge	Q _g	V _{DD} = 30V, V _{GS} = 10V, I _D = 30A		80		nC
Gate to source charge	Q _{gs}			18.2		
Gate to drain (miller) charge	Q _{gd}			31		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 2)	V _{SD}	I _{SD} = 20A, V _{GS} = 0V, T _J = 25°C			1.0	V
Source-drain current (body diode)	I _{SD}				80	A

Notes: 1. The data tested by surface mounted on 1 inch² FR-4 board with 2oz cooper.

2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.

3. The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=1mH.

4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Rating and Characteristic Curves (CMS80N06-HF)

Fig.1 - On-Region Characteristics

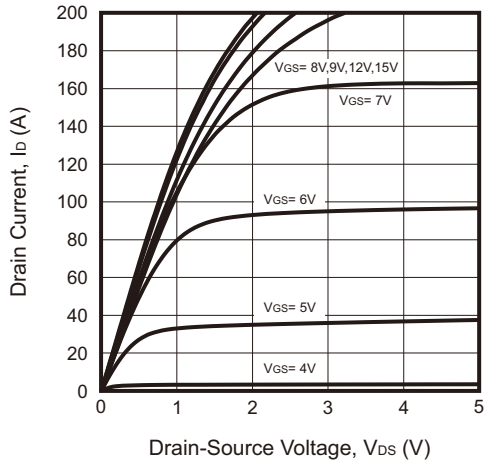


Fig.2 - On-Resistance vs. I_D

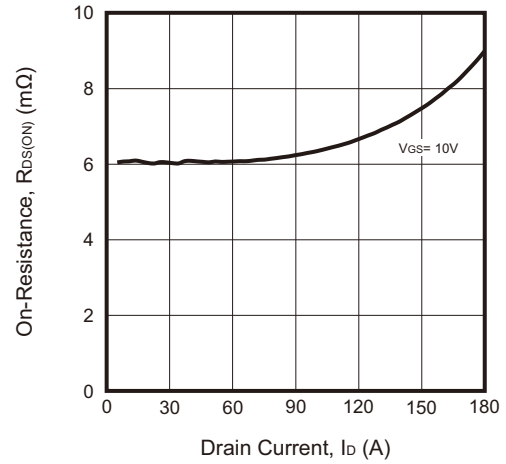


Fig.3 - On-Resistance vs. Gate-Source Voltage

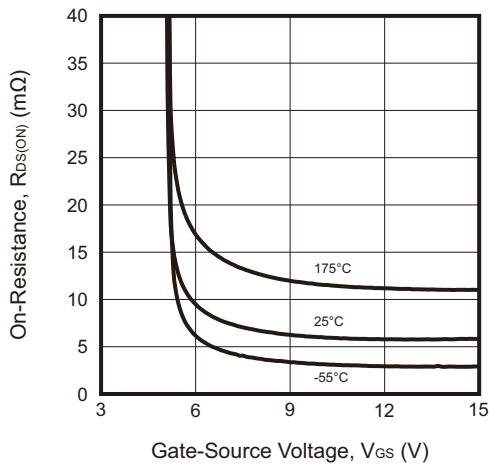


Fig.4 - Body-Diode Characteristics

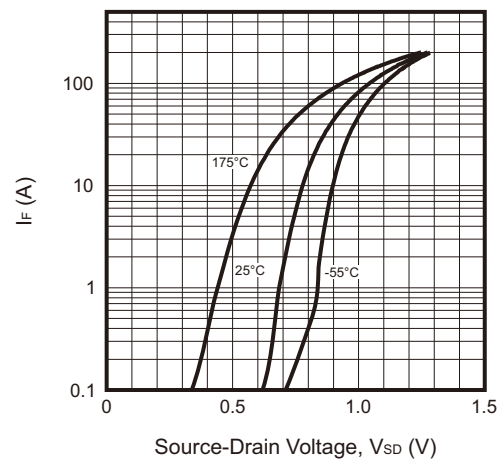


Fig.5 - On-Resistance vs. Junction Temperature

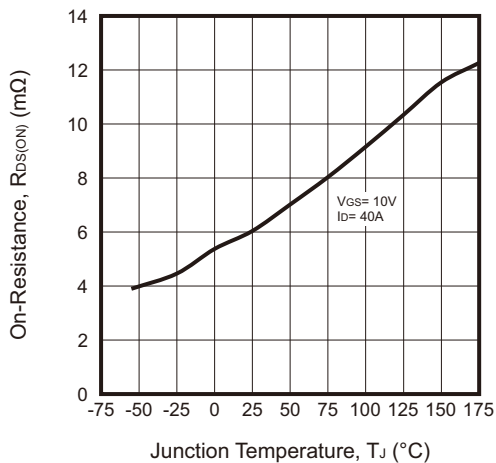
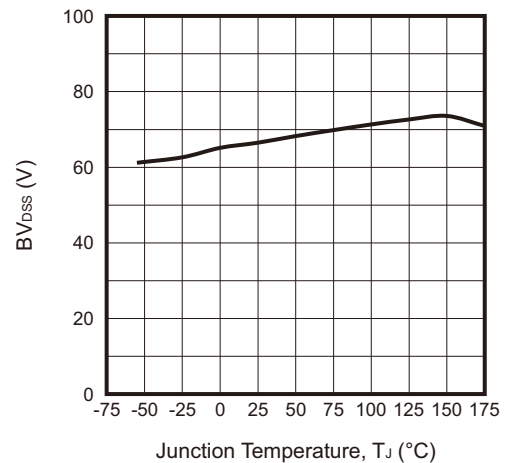


Fig.6 - Drain-Source vs. Junction Temperature



Rating and Characteristic Curves (CMS80N06-HF)

Fig.7 - Capacitance Characteristics

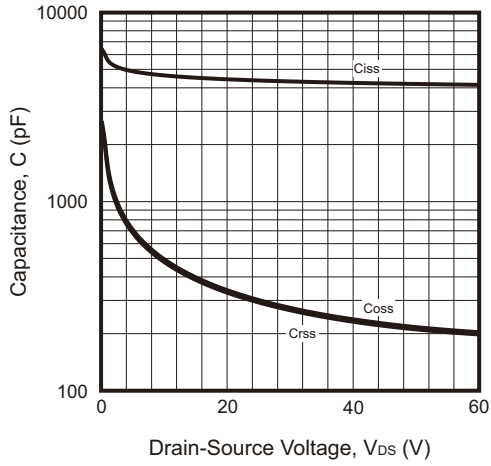


Fig.8 - Gate Voltage vs. Junction Temperature

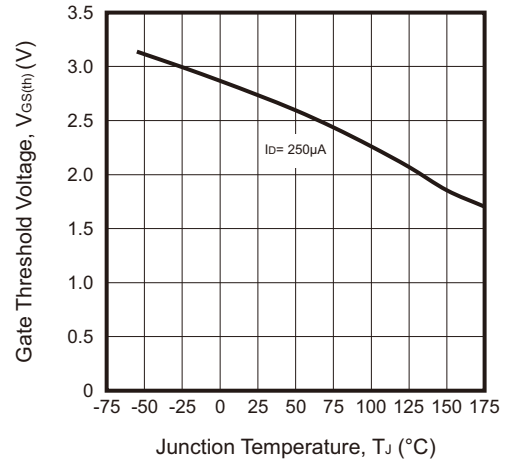


Fig.9 - Gate-Charge Characteristics

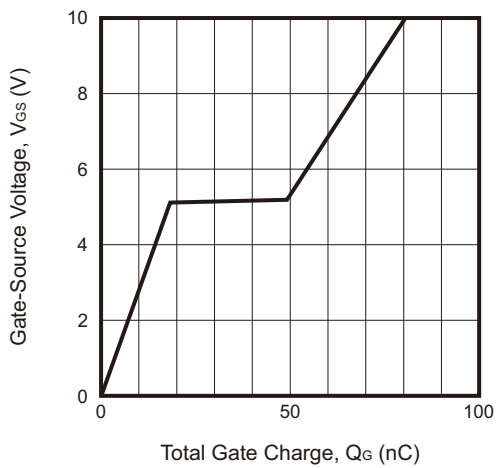
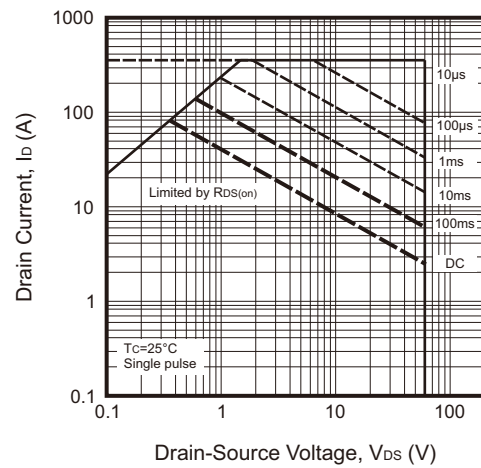
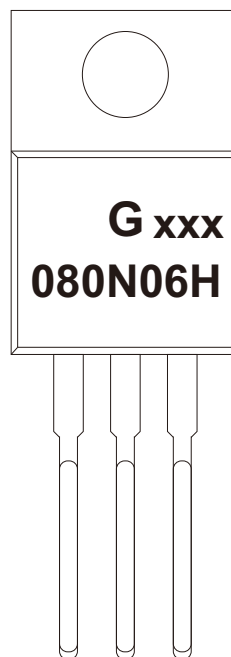


Fig.10 - Maximum Safe Operating Area



Marking Code

Part Number	Marking Code
CMS80N06-HF	080N06H



XXX = Control code

Standard Packaging

Case Type	TUBE PACK
	TUBE (pcs)
TO-220AB	50