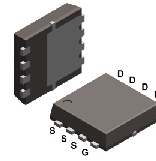


# ACMS66N06V8-HF

**N-Channel**  
**RoHS Device**  
**Halogen Free**

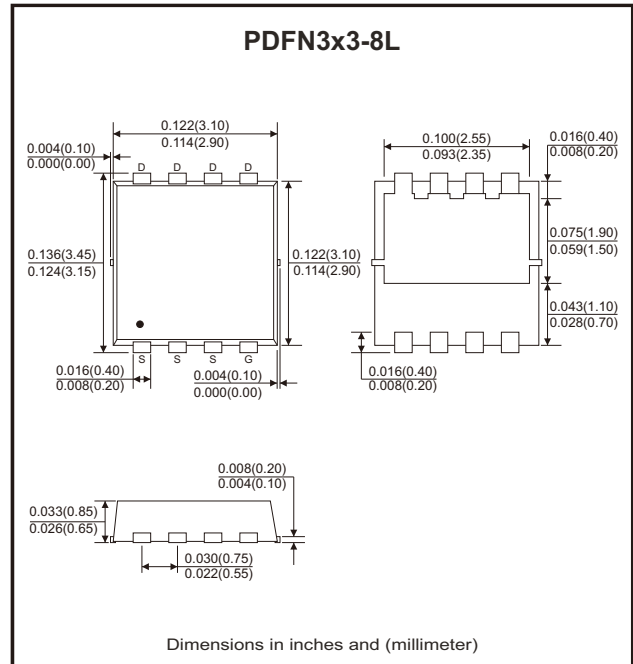


## Features

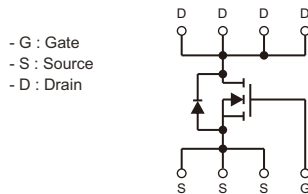
- Super low gate charge.
- Green device available.
- Excellent  $C_{dv}/dt$  effect decline.
- Advanced high cell density trench technology.
- AEC-Q101 Qualified.

## Mechanical data

- Case: PDFN3x3-8L, 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 $T_c=25^\circ\text{C}$ (Note 1)	$I_D$	66	A
Continuous drain current $T_c=100^\circ\text{C}$ (Note 1)	$I_D$	42	
Pulsed drain current ( $t_p = 300\mu\text{s}$ )	$I_{DM}$	158	A
Single pulse avalanche energy (Note 3)	$E_{AS}$	80	mJ
Power dissipation ( $T_c=25^\circ\text{C}$ )	$P_D$	52	W
Thermal resistance junction to case (Note 1)	$R_{\theta JC}$	2.4	$^\circ\text{C}/\text{W}$
Thermal resistance junction to air (Note 1)	$R_{\theta JA}$	42	$^\circ\text{C}/\text{W}$
Operating junction temperature range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage temperature range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

## Electrical Characteristics (at T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
<b>On Characteristics</b>						
Static drain-source on-resistance (Note 2)	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A			6.5	mΩ
	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 20A			9	mΩ
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1		2.5	V
<b>Dynamic Characteristics</b>						
Input capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 30V, f = 1MHz		1625		pF
Output capacitance	C <sub>oss</sub>			438		
Reverse transfer capacitance	C <sub>rss</sub>			25		
Total gate charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	V <sub>DD</sub> = 48V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 15A		17.8		nC
Gate to source charge	Q <sub>gs</sub>			5.8		
Gate to drain (miller) charge	Q <sub>gd</sub>			7.9		
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V R <sub>G</sub> = 3.3Ω, I <sub>D</sub> = 15A		7.5		ns
Turn-on rise time	t <sub>r</sub>			6		
Turn-off delay time	t <sub>d(off)</sub>			29		
Turn-off fall time	t <sub>f</sub>			7.5		
<b>Source-Drain Diode Characteristics</b>						
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> = 5A, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C			1.2	V
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> = 30A, T <sub>J</sub> = 25°C, di/dt = 100A/μs		23		ns
Reverse recovery charge	Q <sub>rr</sub>			60		nC

- Notes: 1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2oz copper.  
 2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.  
 3. The EAS data shows Max. rating. The test condition is V<sub>DD</sub>=25V, V<sub>GS</sub>=10V, L=0.5mH.

## Rating and Characteristic Curves (ACMS66N06V8-HF)

Fig.1 - Output Characteristics

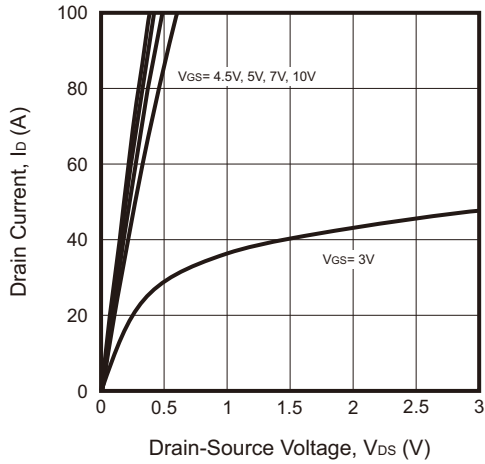


Fig.2 - On-Resistance vs. Junction Temperature

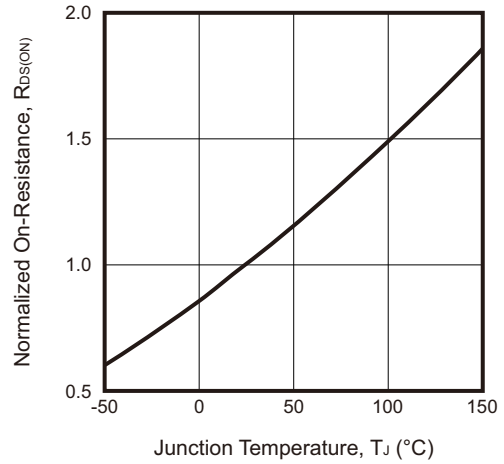


Fig.3 - On-Resistance vs. Gate-Source Voltage

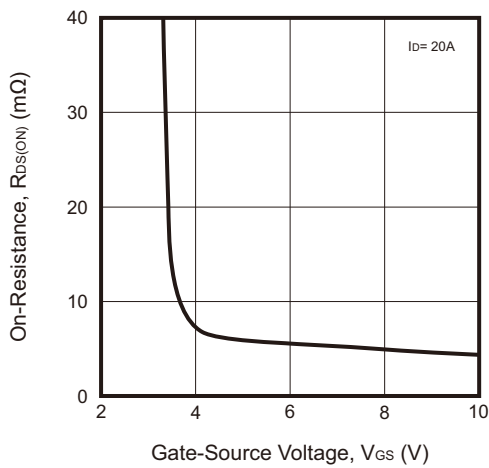


Fig.4 - Body-Diode Characteristics

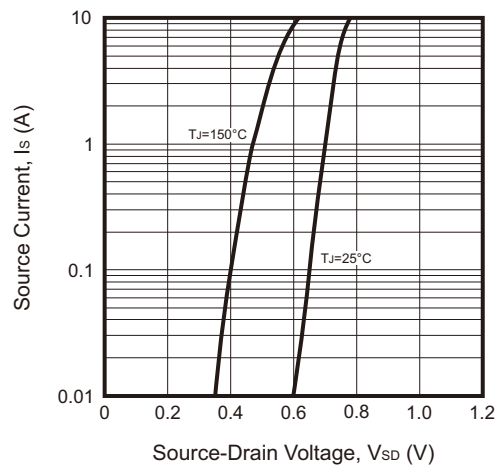


Fig.5 - Maximum Safe Operating Area

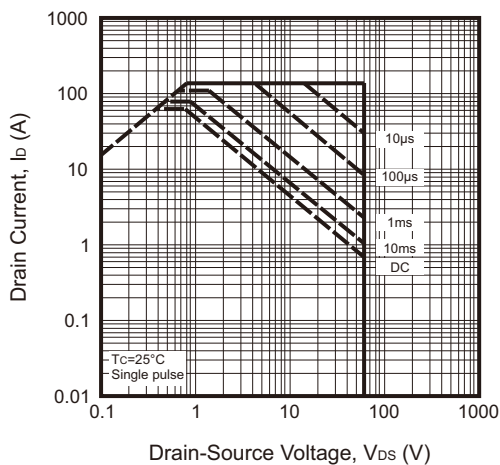
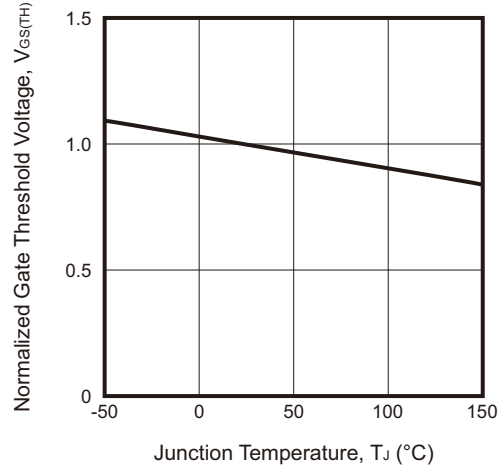


Fig.6 - Gate Threshold Voltage vs. Junction Temperature



Rating and Characteristic Curves (ACMS66N06V8-HF)

Fig.7 - Capacitance Characteristics

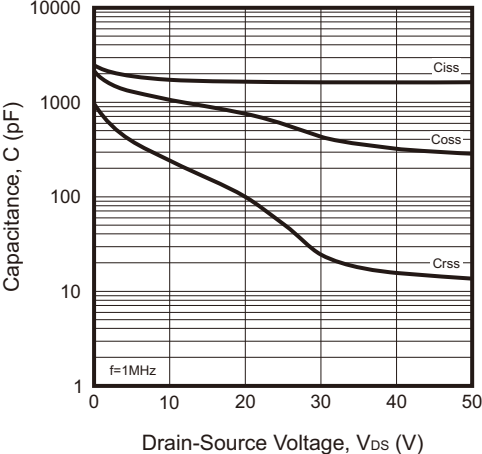
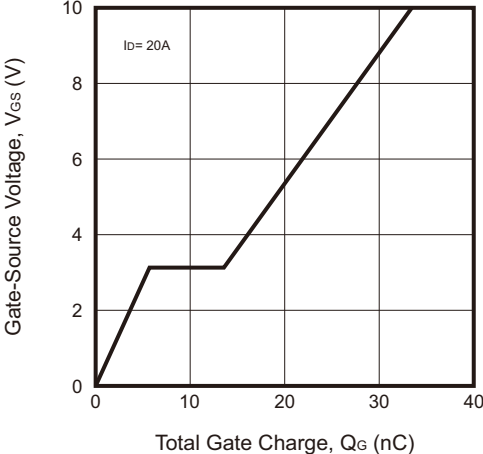
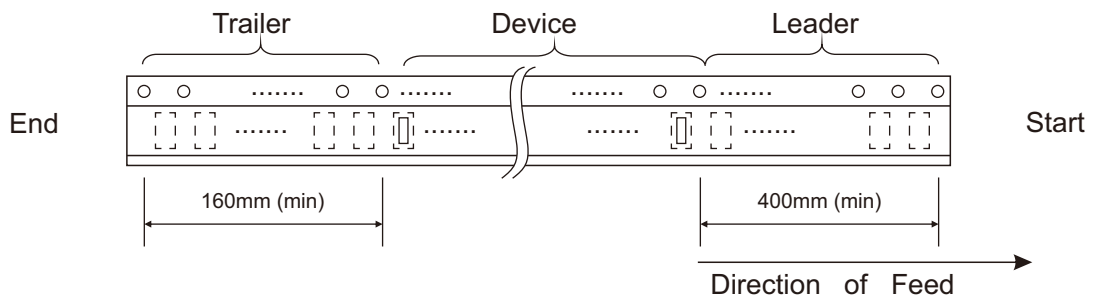
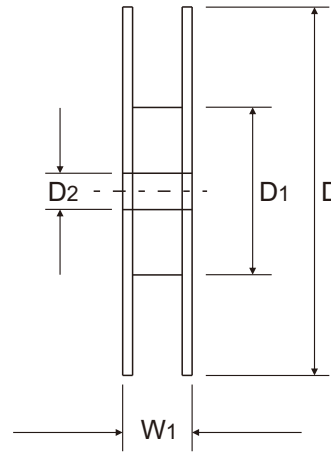
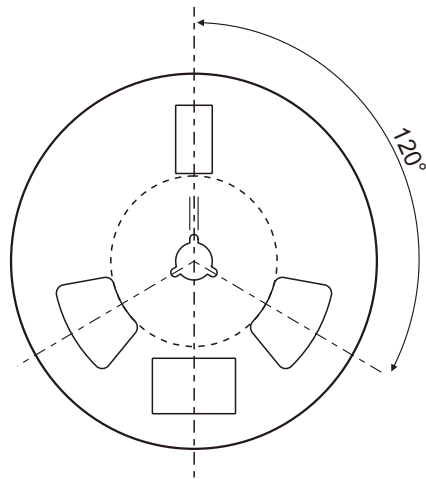
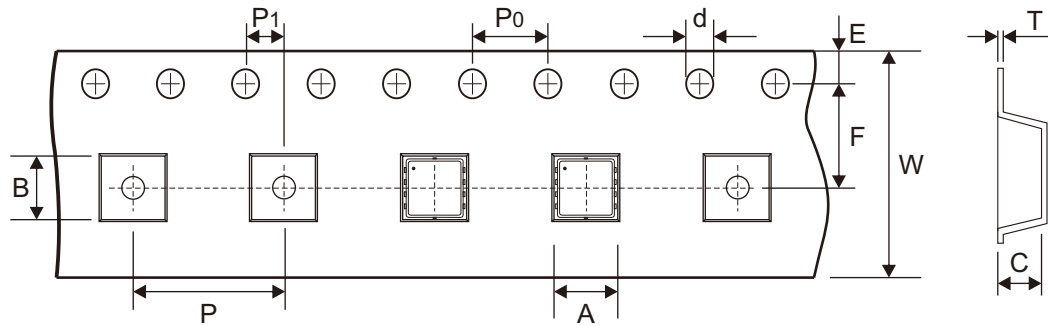


Fig.8 - Gate Charge Characteristics



Reel Taping Specification

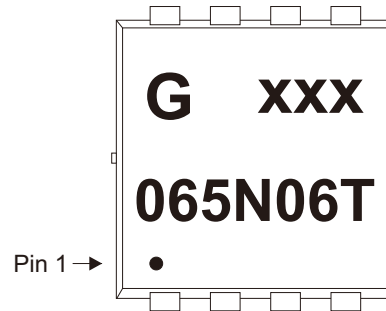


PDFN3x3-8L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.60 ± 0.10	3.60 ± 0.10	1.20 ± 0.10	1.50 + 0.10 - 0.00	330 ± 1.00	100 ± 1.00	13.00 ± 0.20
	(inch)	0.142 ± 0.004	0.142 ± 0.004	0.047 ± 0.004	0.059 + 0.004 - 0.000	12.992 ± 0.039	3.937 ± 0.039	0.512 ± 0.008

PDFN3x3-8L	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.25 ± 0.02	12.00 + 0.30 - 0.10	17.80 ± 0.30
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.010 ± 0.001	0.472 + 0.012 - 0.004	0.701 ± 0.012

## Marking Code

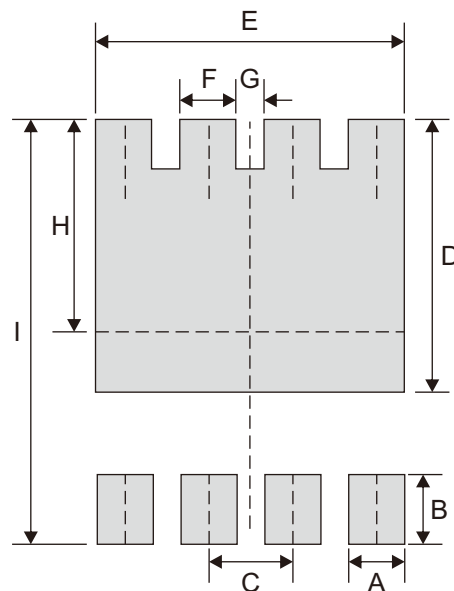
Part Number	Marking Code
ACMS66N06V8-HF	065N06T



XXX = Control code

## Suggested P.C.B. PAD Layout

SIZE	PDFN3x3-8L	
	(mm)	(inch)
A	0.42	0.017
B	0.70	0.028
C	0.65	0.026
D	2.25	0.089
E	2.37	0.093
F	0.42	0.017
G	0.23	0.009
H	1.85	0.073
I	3.70	0.146



## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PDFN3x3-8L	5,000	13