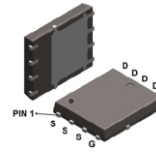


# ACMS49P04H8-HF

**P-Channel**  
**RoHS Device**  
**Halogen Free**

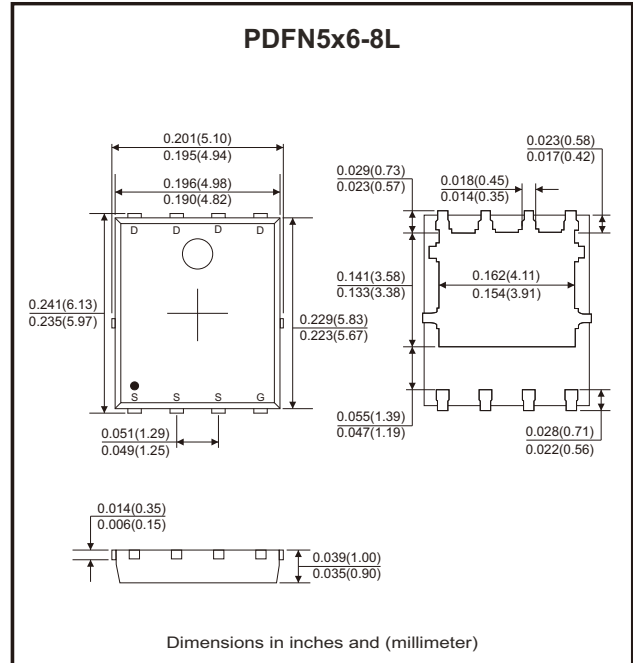


## Features

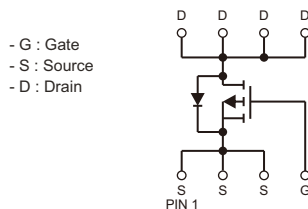
- Super low gate charge.
- Excellent  $C_{dv}/dt$  effect decline.
- Advanced high cell density trench technology.
- AEC-Q101 Qualified.

## Mechanical data

- Case: PDFN5x6-8L, 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	$V_{DSS}$	-40	V
Gate-source voltage	$V_{GSS}$	±20	V
Continuous drain current ( $V_{GS} = -10V, T_c = 25^\circ C$ )	$I_D$	-49	A
Continuous drain current ( $V_{GS} = -10V, T_c = 100^\circ C$ )	$I_D$	-31	
Pulsed drain current (Note 1, 2)	$I_{DM}$	-268	A
Single pulse avalanche energy (Note 3)	$E_{AS}$	125	mJ
Power dissipation ( $T_c = 25^\circ C$ )	$P_D$	50	W
Thermal resistance junction to air (Note 4)	$R_{\theta JA}$	96	$^\circ C/W$
Thermal resistance junction to case	$R_{\theta JC}$	2.5	$^\circ C/W$
Operating junction temperature range	$T_J$	-55 to +150	$^\circ C$
Storage temperature range	$T_{STG}$	-55 to +150	$^\circ C$

**Electrical Characteristics** (at  $T_A=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -32V, V_{GS} = 0V, T_c = 25^\circ\text{C}$			-1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics</b>						
Static drain-source on-resistance (Note 1)	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -15A$			13	m $\Omega$
		$V_{GS} = -4.5V, I_D = -10A$			20	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.47	-2.5	V
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = -25V, f = 1\text{MHz}$		3941		pF
Output capacitance	$C_{oss}$			262		
Reverse transfer capacitance	$C_{riss}$			237		
<b>Switching Characteristics</b>						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V, R_G = 3.3\Omega, R_L = 15\Omega, I_D = -1A$		40		ns
Turn-on rise time	$t_r$			35		
Turn-off delay time	$t_{d(off)}$			100		
Turn-off fall time	$t_f$			9.6		
Total gate charge	$Q_g$	$V_{DD} = -32V, V_{GS} = -10V, I_D = -50A$		67.5		nC
Gate to source charge	$Q_{gs}$			16		
Gate to drain (miller) charge	$Q_{gd}$			9		
<b>Source-Drain Diode Characteristics</b>						
Diode forward voltage	$V_{SD}$	$I_{SD} = -1.7A, V_{GS} = 0V, T_J = 25^\circ\text{C}$			-1.2	V
Diode continuous forward current (Note 2,4)	$I_{SD}$				-49	A

Notes: 1. The data tested by pulsed, pulse width  $\leq 10\mu s$ , duty cycle  $\leq 2\%$ .

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

3. The EAS data shows Max. rating. The test condition is  $V_{DD} = -25V, V_{GS} = -10V, L = 0.5\text{mH}$ .

4. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.

## Rating and Characteristic Curves (ACMS49P04H8-HF)

Fig.1 - Typical Output Characteristics

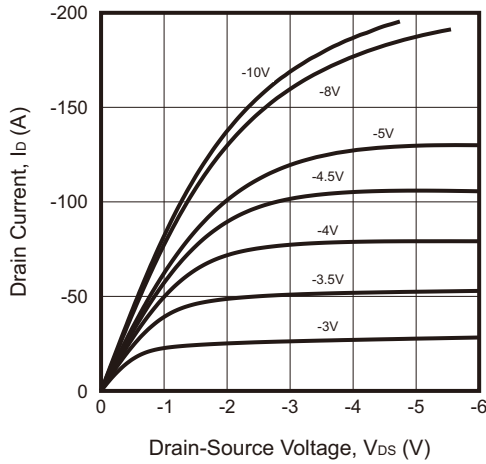


Fig.2 - Transfer Characteristics

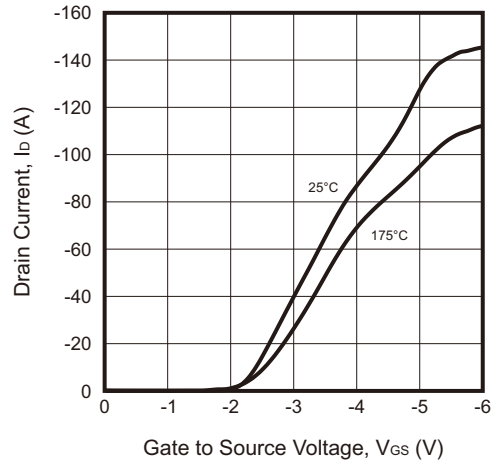


Fig.3 - Body-Diode Characteristics

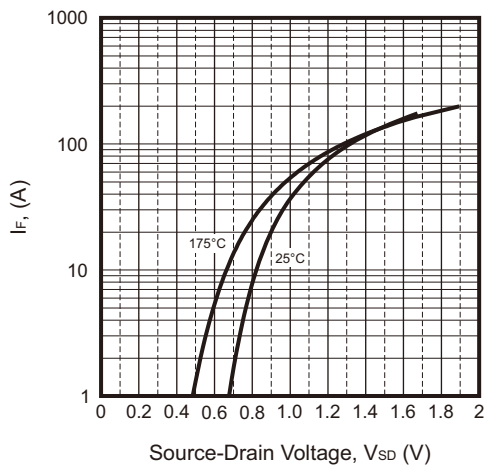


Fig.4 - Drain-Source On-State Resistance

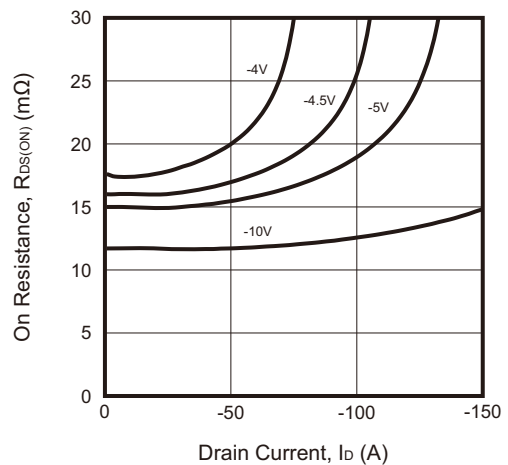


Fig.5 - Gate Voltage vs. Junction Temperature

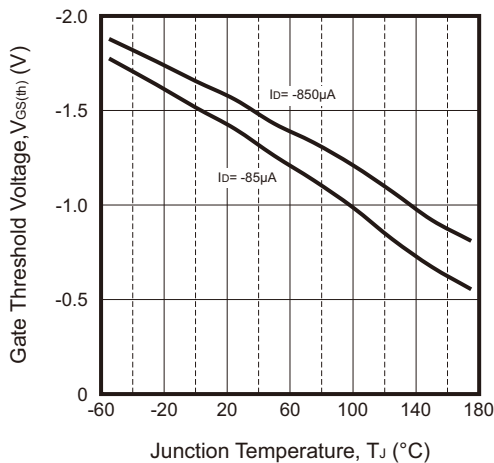
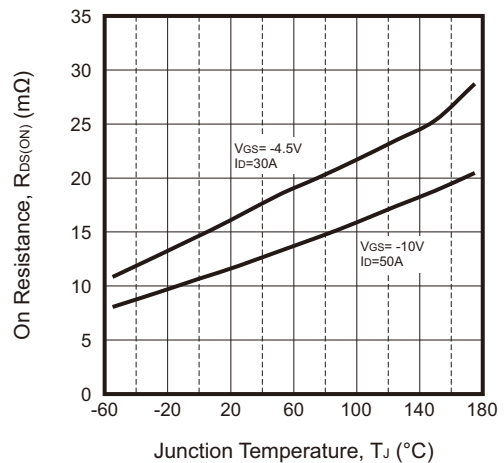


Fig.6 - On-Resistance vs. Junction Temperature



## Rating and Characteristic Curves (ACMS49P04H8-HF)

Fig.7 - Capacitance Characteristics

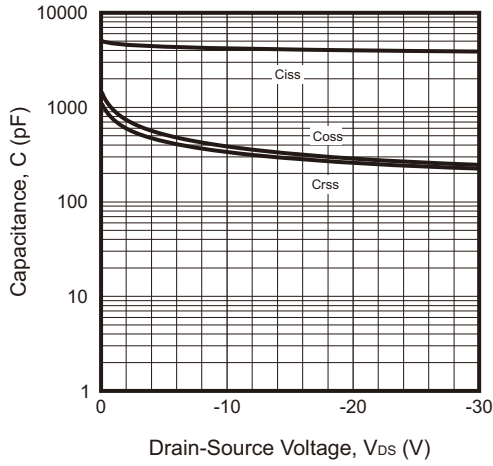


Fig.8 - Drain-Source Breakdown Voltage

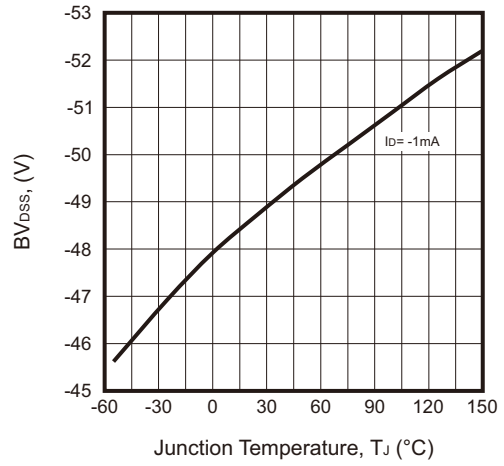


Fig.9 - Gate-Charge Characteristics

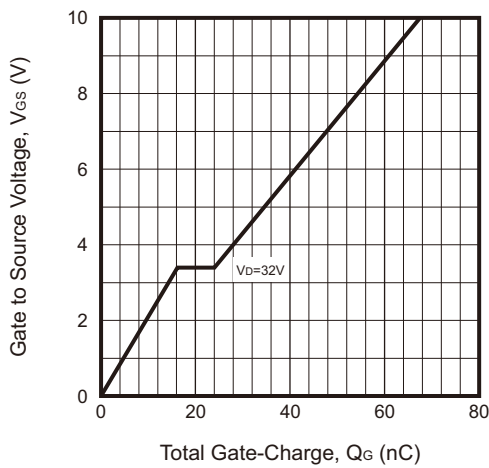
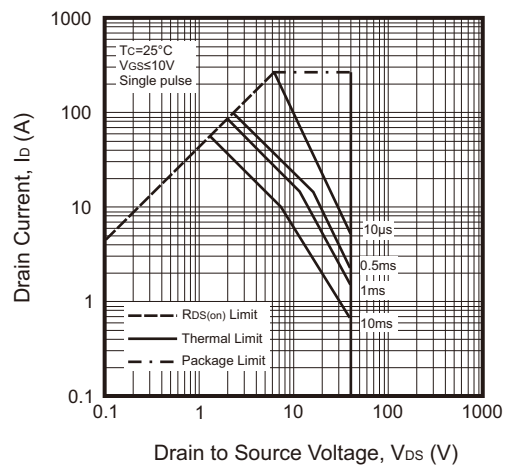
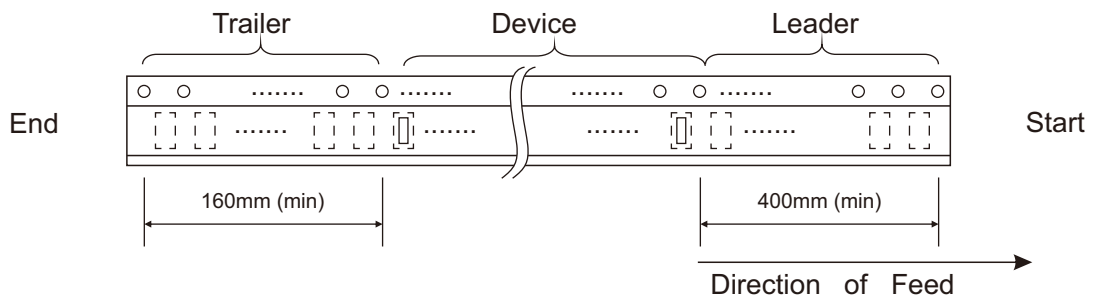
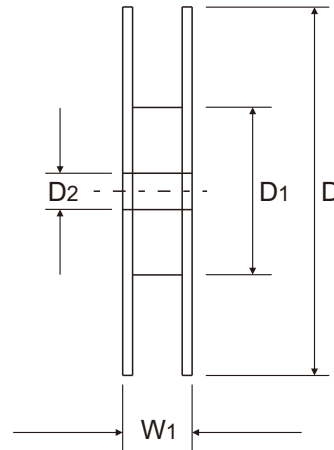
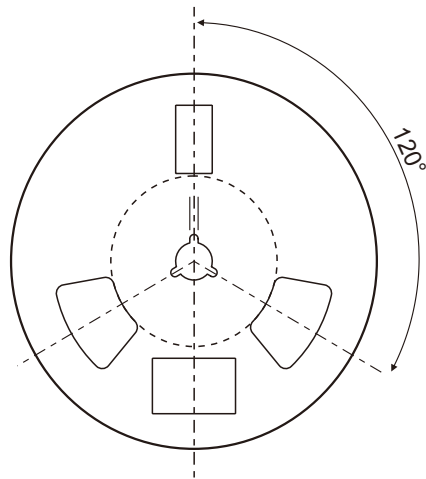
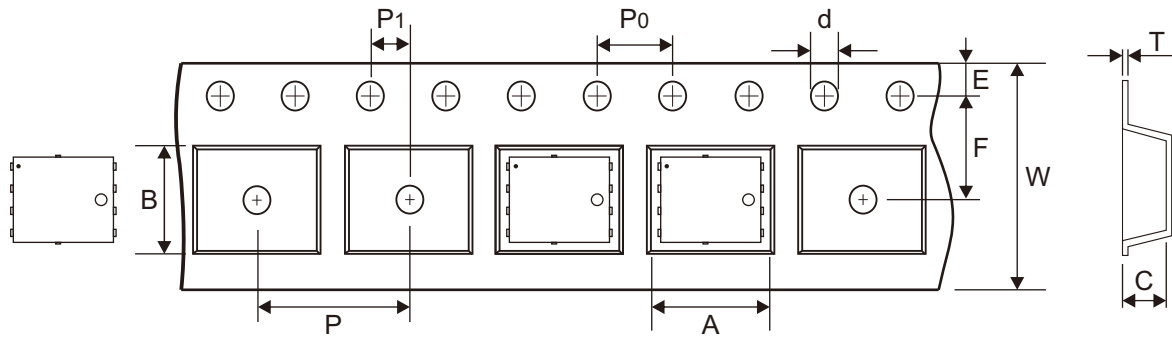


Fig.10 - Safe Operating Area



Reel Taping Specification

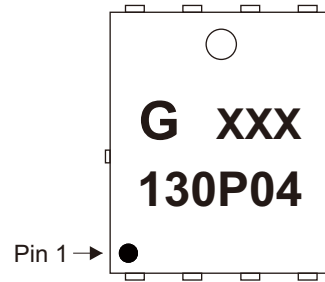


PDFN5x6 -8L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.30 ± 0.10	5.30 ± 0.10	1.20 ± 0.10	1.55 + 0.01	330 ± 1.00	100 ± 1.00	13.00 ± 0.20
	(inch)	0.248 ± 0.004	0.209 ± 0.004	0.047 ± 0.004	0.061 + 0.0004	12.992 ± 0.039	3.937 ± 0.039	0.512 ± 0.008

PDFN5x6 -8L	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.25 ± 0.03	12.00 + 0.30 - 0.10	17.80 ± 0.30
	(inch)	0.069 ± 0.004	0.217 ± 0.004	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

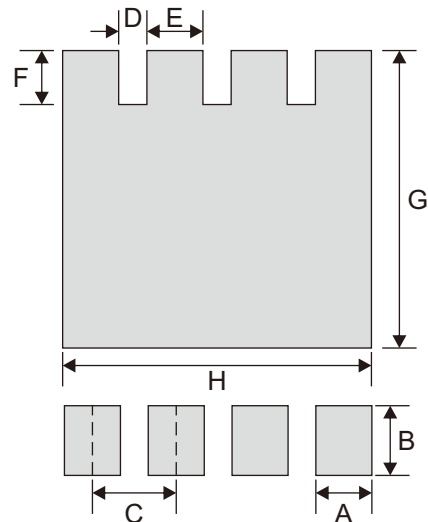
Part Number	Marking Code
ACMS49P04H8-HF	130P04



XXX = Control code

## Suggested P.C.B. PAD Layout

SIZE	PDFN5x6-8L	
	(mm)	(inch)
A	0.80	0.031
B	1.00	0.039
C	1.27	0.050
D	0.47	0.019
E	0.80	0.031
F	0.85	0.033
G	4.50	0.177
H	4.60	0.181



## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PDFN5x6-8L	5,000	13