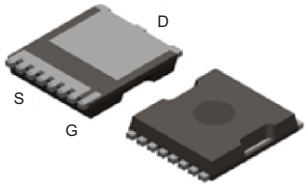
ACMS300N10T8-HF

N-Channel
RoHS Device
Halogen Free



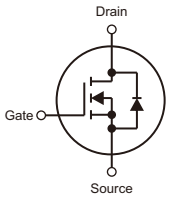
Features

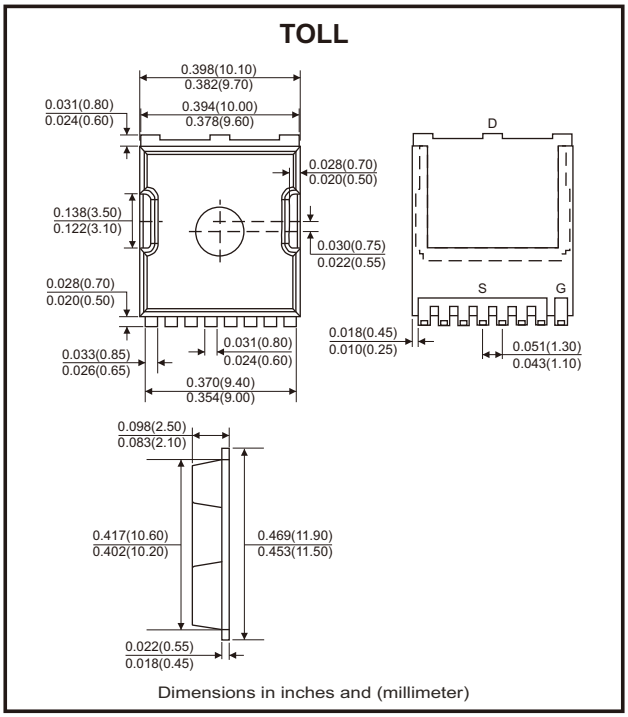
- Ultra-low on-resistance and gate-charge.
- Advanced shielded-gate technology.
- AEC-Q101 Qualified.

Mechanical data

- Case: TOLL, molded plastic.
- Terminals: Matte tin-plated leads, solderability-per MIL-STD-202, method 208.
- Mounting position: Any.

Circuit Diagram





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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current (T_C=25°C)	I_D	300	A
Continuous drain current (T_C=100°C)	I_D	210	
Continuous drain current (T_A=25°C) (Note 1)	I_D	33	
Continuous drain current (T_A=100°C) (Note 1)	I_D	23	
Pulsed drain current @tp=10μs, T_C=25°C	I_{DM}	1200	A
Single pulse avalanche energy (Note 3)	E_{AS}	3500	mJ
Power dissipation (T_C=25°C)	P_D	300	W
Operating junction temperature range	T_J	-55 to +175	°C
Storage temperature range	T_{STG}	-55 to +175	°C

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance junction to case	$R_{\theta JC}$		0.4	0.5	°C/W
Thermal resistance junction to air (Note 1)	$R_{\theta JA}$		24	40	°C/W

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D = 1mA	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V			5	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20, V_{DS} = 0V			±100	nA
On Characteristics						
Static drain-source on-resistance (Note 2)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 150A		1.3	1.6	mΩ
	$R_{DS(on)}$	V_{GS} = 6V, I_D = 75A		1.7	2.2	mΩ
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	V
Gate resistance	R_G	V_{GS} = 0V, f = 1MHz		2		Ω
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz		13113		pF
Output capacitance	C_{oss}			2167		
Reverse transfer capacitance	C_{rss}			25		
Switching Characteristics						
Turn-on delay time (Note 4)	$t_{d(on)}$	V_{DD} = 50V, V_{GS} = 10V R_G = 1.8Ω , I_D = 100A		20		ns
Turn-on rise time (Note 4)	t_r			13		
Turn-off delay time (Note 4)	$t_{d(off)}$			49		
Turn-off fall time (Note 4)	t_f			17		
Total gate charge	Q_g	V_{DD} = 50V, V_{GS} = 10V, I_D = 100A		211		nC
Gate to source charge	Q_{gs}			57		
Gate to drain (miller) charge	Q_{gd}			59		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 2)	V_{SD}	I_S = 100A, V_{GS} = 0V		0.8	1.2	V
Reverse recovery time	t_{rr}	I_F = 40A, V_{GS} = 0V, di/dt = 100A/μs		118		ns
Reverse recovery change	Q_{rr}			346		nC

Notes: 1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
3. The E_{AS} data shows max. rating. The test condition is V_{DD}=80V, V_{GS}=10V, L=50mH.
4. Guaranteed by design, not subject to production.

Typical Rating and Characteristic Curves (ACMS300N10T8-HF)

Fig.1 - Power Dissipation

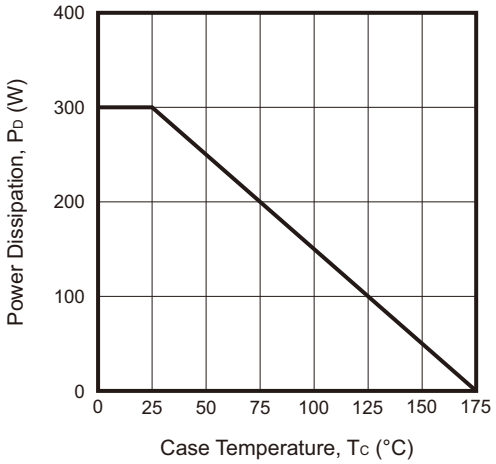


Fig.2 - Drain Current

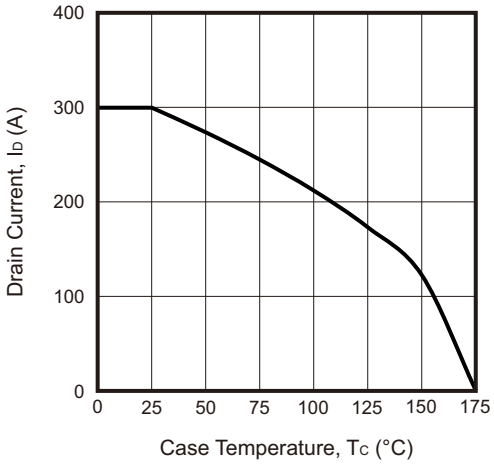


Fig.3 - Typical Output Characteristics

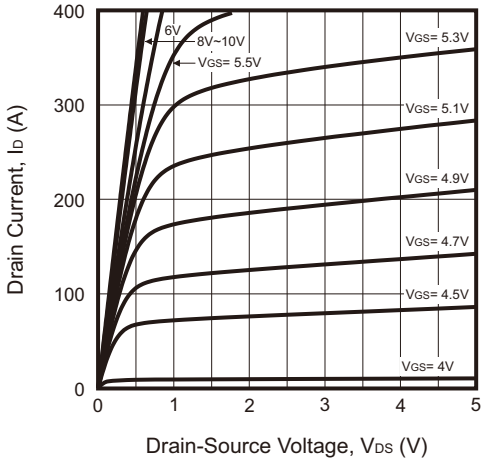


Fig.4 - On-Resistance vs. Drain Current and Gate Voltage

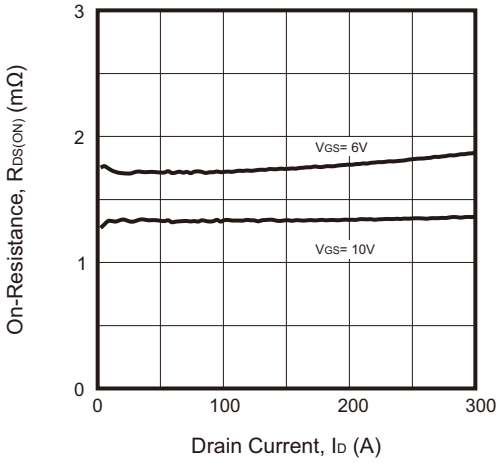


Fig.5 - On-Resistance vs. Gate-Source Voltage

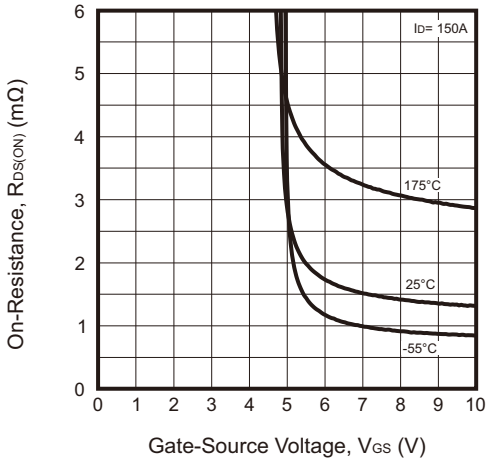
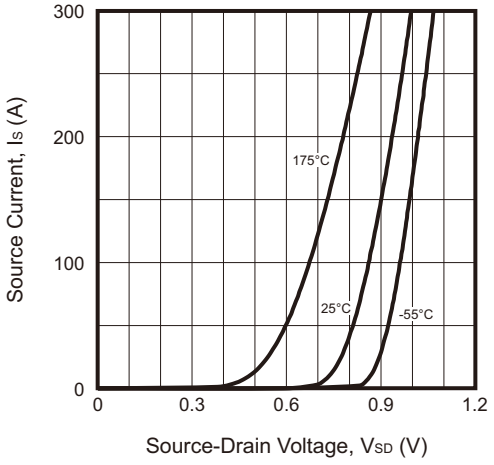


Fig.6 - Body-Diode Characteristics



Typical Rating and Characteristic Curves (ACMS300N10T8-HF)

Fig.7 - Normalized On-Resistance vs. Junction Temperature

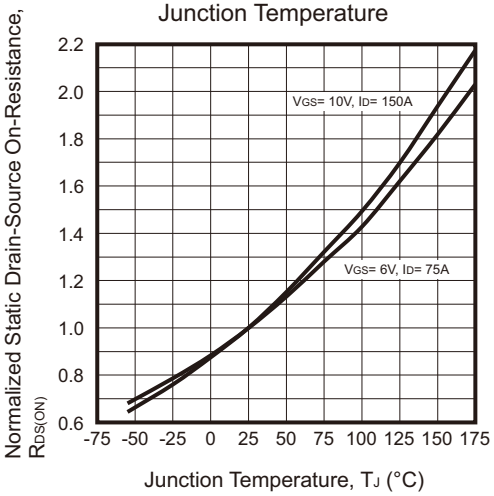


Fig.8 - Transfer Characteristics

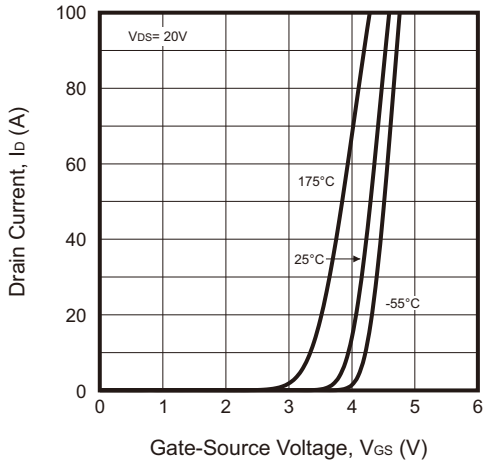


Fig.9 - Capacitance Characteristics

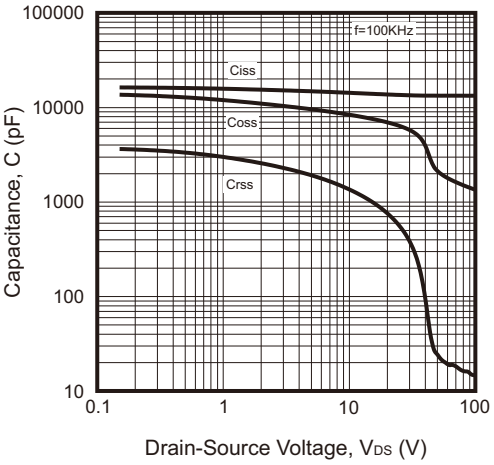


Fig.10 - Gate Charge Characteristics

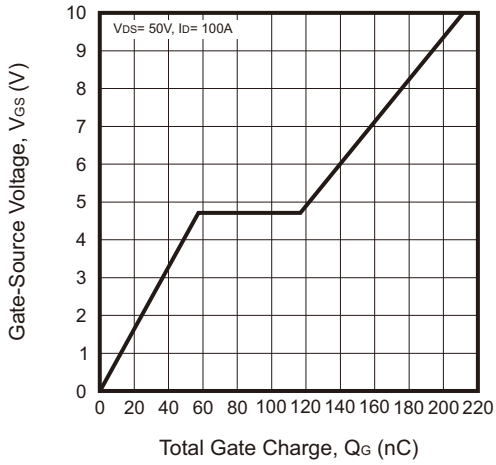


Fig.11 - Normalized Breakdown Voltage vs. Junction Temperature

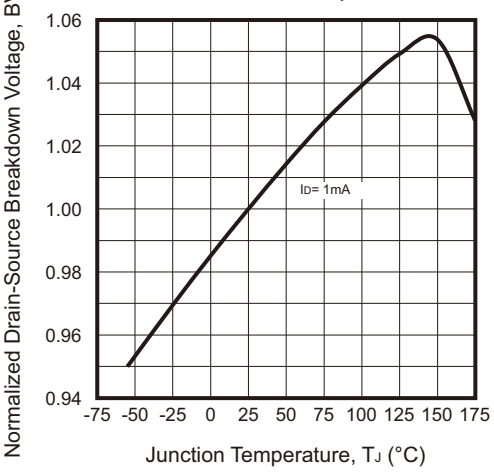
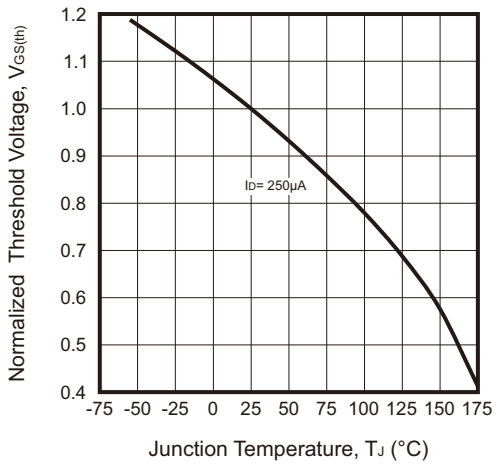
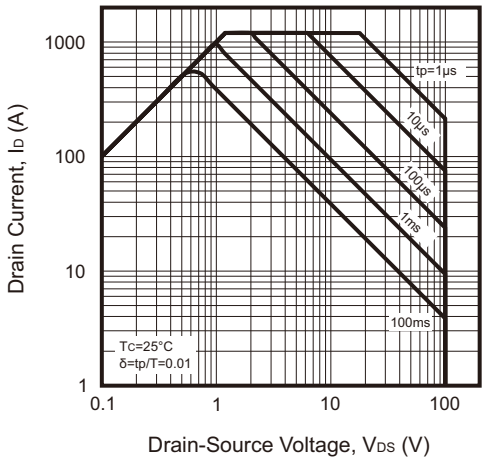


Fig.12 - Normalized $V_{GS(th)}$ vs. Junction Temperature

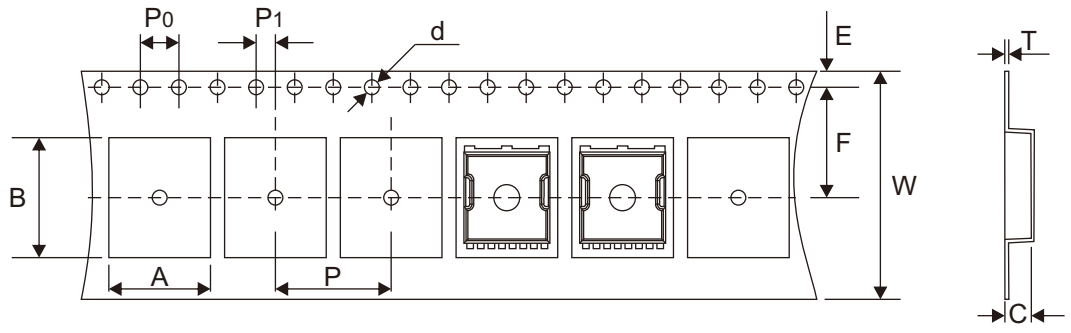


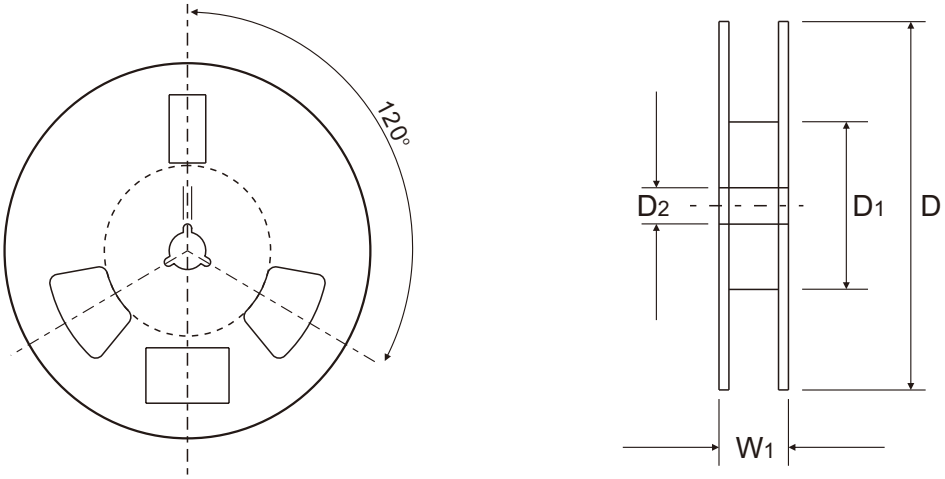
Typical Rating and Characteristic Curves (ACMS300N10T8-HF)

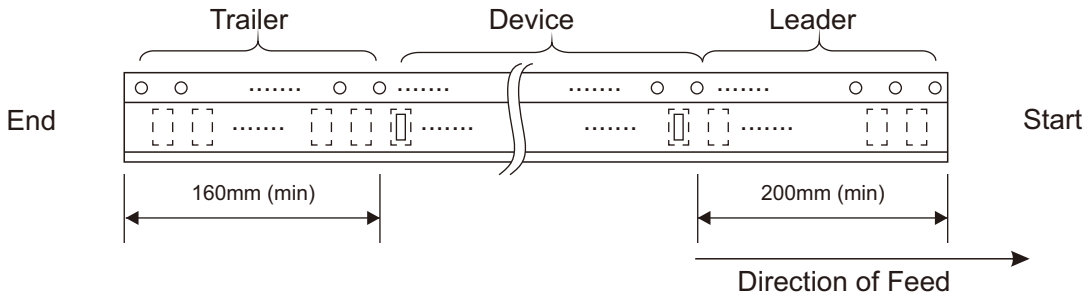
Fig.13 - Safe Operating Area



Reel Taping Specification





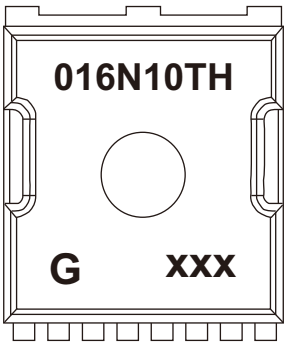


	SYMBOL	A	B	C	d	D	D_1	D_2
TOLL	(mm)	10.50 ± 0.10	12.28 ± 0.10	2.70 ± 0.10	1.50 + 0.10 − 0.00	330.00 ± 0.20	100.00 ± 0.20	21.00 ± 0.40
	(inch)	0.413 ± 0.004	0.483 ± 0.004	0.106 ± 0.004	0.061 + 0.004 − 0.000	12.992 ± 0.008	3.937 ± 0.008	0.827 ± 0.016

	SYMBOL	E	F	P	P_0	P_1	T	W	W_1
TOLL	(mm)	1.75 ± 0.10	11.50 ± 0.10	12.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.30 ± 0.05	24.00 ± 0.30	24.00 ± 0.20
	(inch)	0.069 ± 0.004	0.453 ± 0.004	0.472 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.012 ± 0.002	0.945 ± 0.012	0.945 ± 0.008

Marking Code

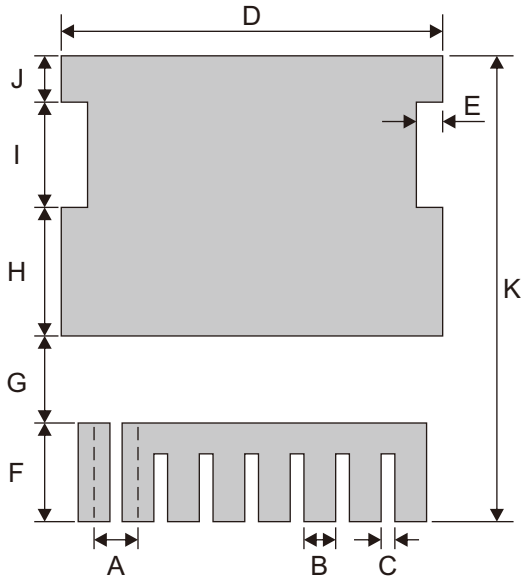
Part Number	Marking Code
ACMS300N10T8-HF	016N10TH



XXX = Control code

Suggested P.C.B. PAD Layout

SIZE	TOLL	
	(mm)	(inch)
A	1.20	0.047
B	0.80	0.031
C	0.40	0.016
D	10.10	0.398
E	0.70	0.028
F	2.80	0.110
G	2.50	0.098
H	3.70	0.146
I	2.90	0.114
J	1.40	0.055
K	13.30	0.524



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
TOLL	2,000	13