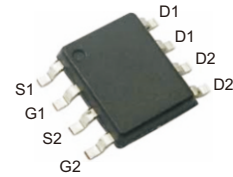


ACMS04NN03Q8-HF

Dual N-Channel

RoHS Device

Halogen Free



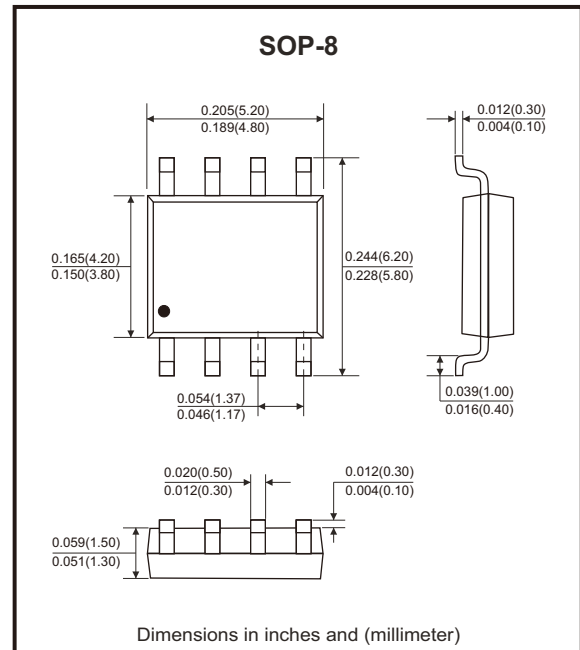
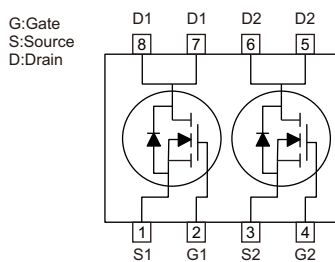
Features

- Good stability and uniformity.
- Lower $R_{DS(on)}$.
- AEC-Q101 Qualified.

Mechanical data

- Case: SOP-8, molded plastic.
- Terminals: Matte tin-plated leads, solderability-per MIL-STD-202, method 208.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	30	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current ($T_C=25^\circ\text{C}$)	I_D	10	A
Continuous drain current ($T_A=25^\circ\text{C}$) (Note 1)	I_D	6	
Continuous drain current ($T_A=100^\circ\text{C}$) (Note 1)	I_D	3.8	
Pulsed drain current @ $t_p=10\mu\text{s}$, $T_A=25^\circ\text{C}$	I_{DM}	36	A
Single pulse avalanche energy (Note 4)	E_{AS}	40	mJ
Power dissipation ($T_A=25^\circ\text{C}$) (Note 1)	P_D	2	W
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance junction to case	$R_{\theta JC}$		20	25	$^\circ\text{C/W}$
Thermal resistance junction to air (Note 1)	$R_{\theta JA}$		55	62.5	$^\circ\text{C/W}$
Thermal resistance junction to air (Note 2)	$R_{\theta JA}$		70	80	$^\circ\text{C/W}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	30	34	40	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V	0	0.005	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = 20V, V _{DS} = 0V	-100	2	100	nA
		V _{GS} = -20V, V _{DS} = 0V	-100	-2	100	
On Characteristics						
Static drain-source on-resistance (Note 3)	R _{DS(on)}	V _{GS} = 10V, I _D = 6.3A		22	30	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = 4.8A		31	45	mΩ
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.7	2.5	V
Gate resistance	R _G	V _{GS} = 0V, f = 1MHz		4		Ω
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		526		pF
Output capacitance	C _{oss}			64		
Reverse transfer capacitance	C _{rss}			47		
Switching Characteristics						
Turn-on delay time (Note 5)	t _{d(on)}	V _{DD} = 20V, V _{GS} = 10V R _G = 3Ω ,R _L = 1Ω, I _D = 8A		10		ns
Turn-on rise time (Note 5)	t _r			12		
Turn-off delay time (Note 5)	t _{d(off)}			32		
Turn-off fall time (Note 5)	t _f			8		
Total gate charge	Q _g	V _{DD} = 15V, V _{GS} = 10V, I _D = 5.8A		13		nC
Gate to source charge	Q _{gs}			2.7		
Gate to drain (miller) charge	Q _{gd}			2.1		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 3)	V _{SD}	I _{SD} = 1A, V _{GS} = 0V		0.75	1.2	V
Reverse recovery time	t _{rr}	I _F = 5A, V _{GS} = 0V, dI _F /dt = 100A/μs		110		ns
Reverse recovery charge	Q _{rr}			69		nC

- Notes: 1. The data tested by surface mounted on a 1inch² FR-4 board with 2OZ copper, $t \leq 10s$.
 2. The data tested by surface mounted on a 1inch² FR-4 board with 2OZ copper, steady state.
 3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 4. The EAS data shows max. rating. The test condition is $V_{DD}=25V, V_{GS}=5V, L=8mH$.
 5. Guaranteed by design, not subject to production.

Typical Rating and Characteristic Curves (ACMS04NN03Q8-HF)

Fig.1 - Power Dissipation

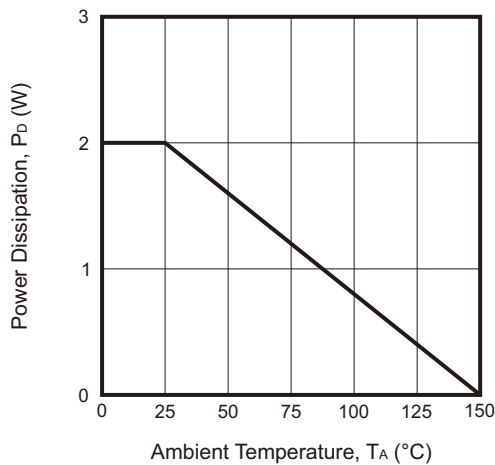


Fig.2 - Drain Current

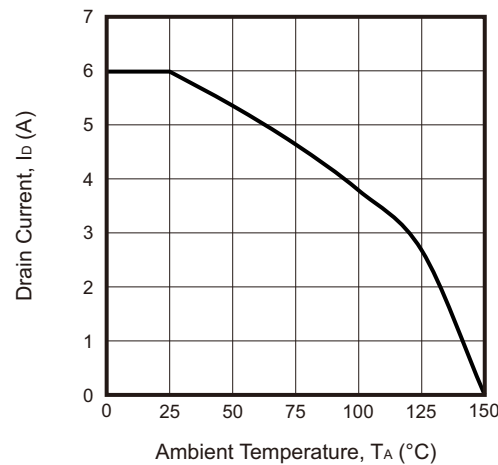


Fig.3 - Typical Output Characteristics

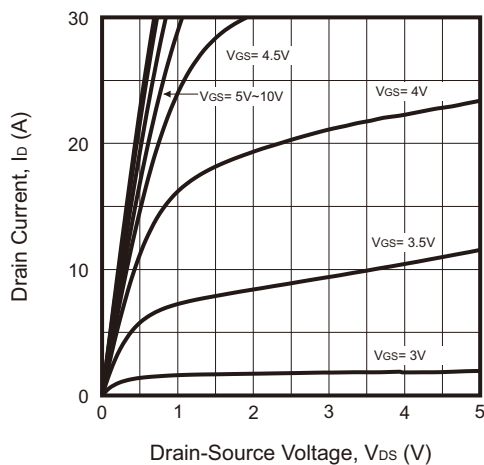


Fig.4 - On-Resistance vs. Drain Current and Gate Voltage

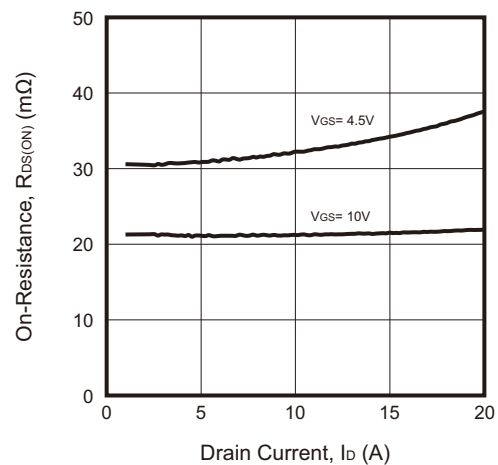


Fig.5 - On-Resistance vs. Gate-Source Voltage

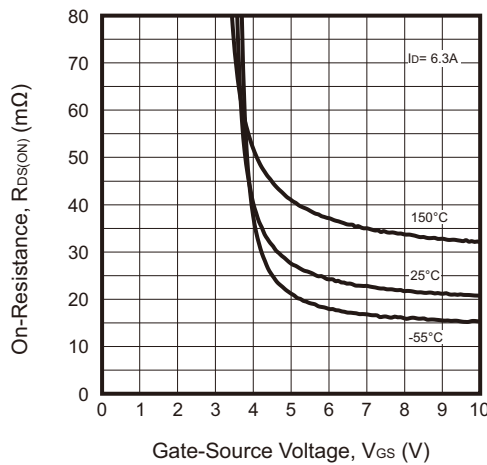
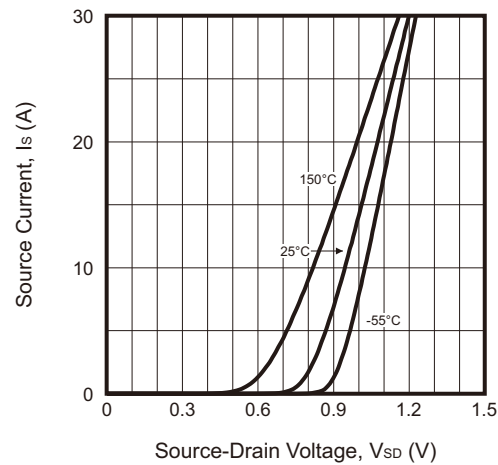
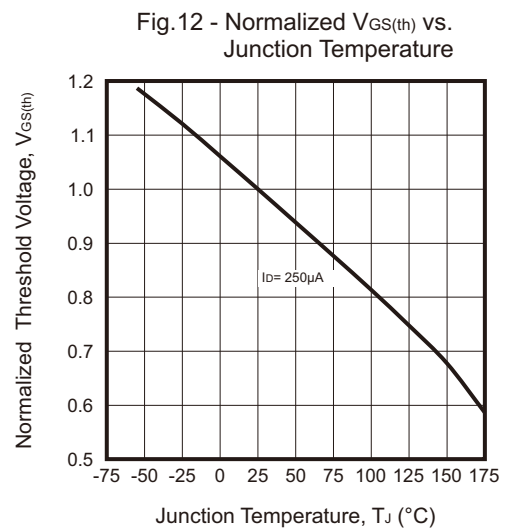
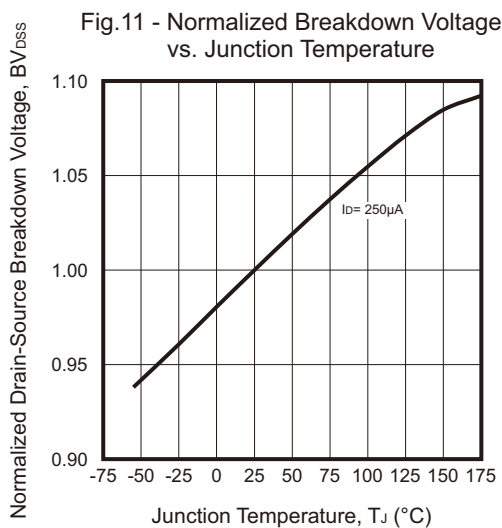
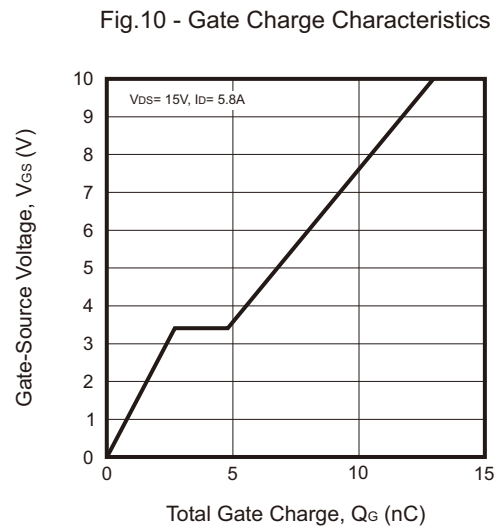
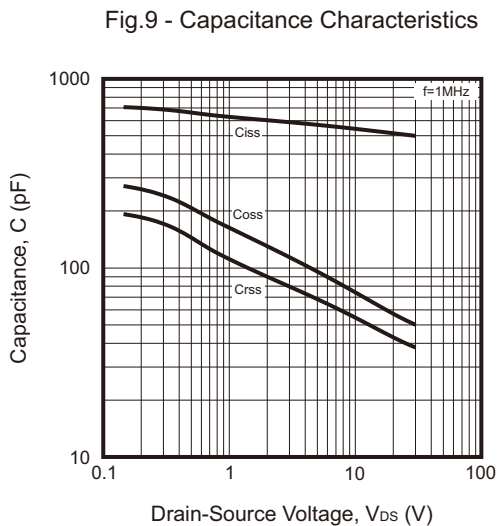
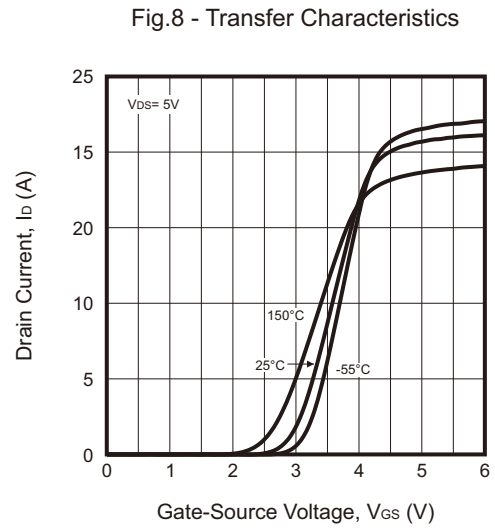
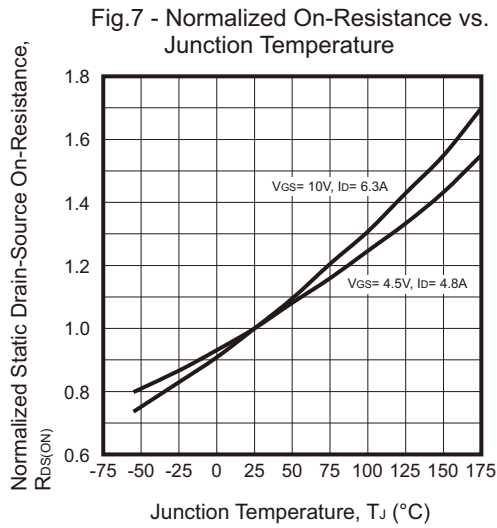


Fig.6 - Body-Diode Characteristics

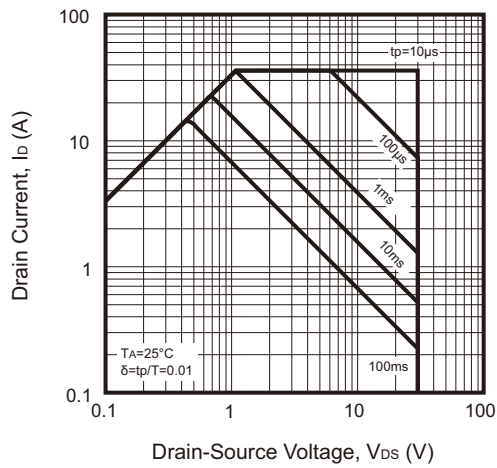


Typical Rating and Characteristic Curves (ACMS04NN03Q8-HF)

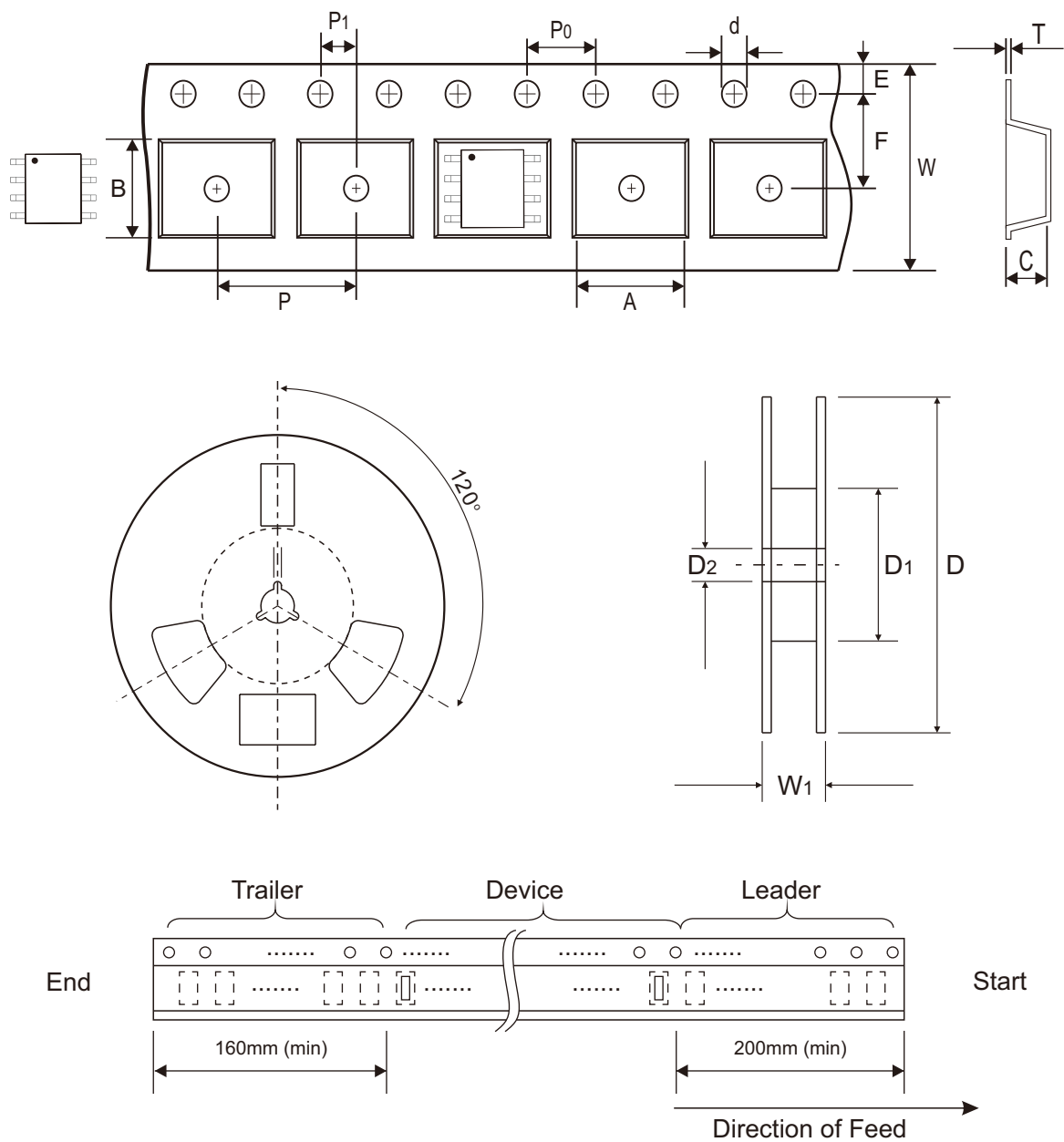


Typical Rating and Characteristic Curves (ACMS04NN03Q8-HF)

Fig.13 - Safe Operating Area



Reel Taping Specification

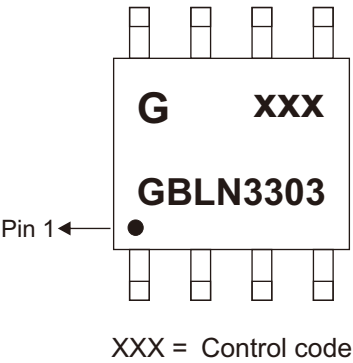


SOP-8	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.40 ± 0.10	5.40 ± 0.10	2.10 ± 0.10	$1.50 + 0.10 - 0.00$	330.00 ± 2.00	100.00 ± 2.00	13.00 ± 0.50
	(inch)	0.252 ± 0.004	0.213 ± 0.004	0.083 ± 0.004	$0.059 + 0.004 - 0.000$	12.992 ± 0.079	3.937 ± 0.079	0.512 ± 0.020

SOP-8	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.05	4.00 ± 0.05	2.00 ± 0.05	0.25 ± 0.05	12.00 ± 0.10	18.50 ± 2.00
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.002	0.157 ± 0.002	0.079 ± 0.002	0.010 ± 0.002	0.472 ± 0.004	0.728 ± 0.079

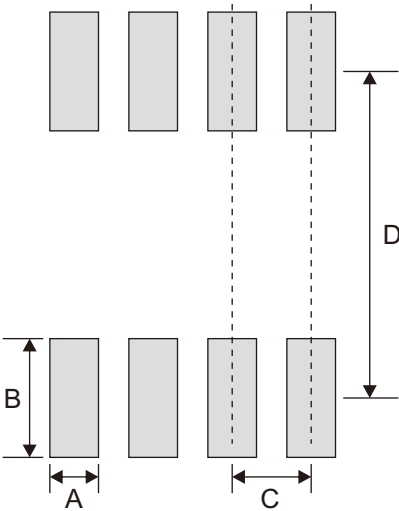
Marking Code

Part Number	Marking Code
ACMS04NN03Q8-HF	GBLN3303



Suggested P.C.B. PAD Layout

SIZE	SOP-8	
	(mm)	(inch)
A	0.65	0.026
B	1.75	0.069
C	1.27	0.050
D	5.60	0.220



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOP-8	4,000	13