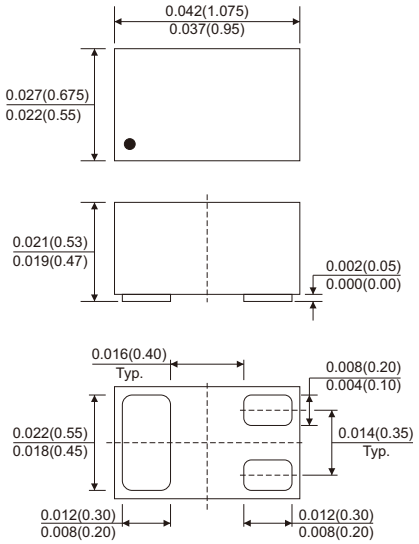
ABSS138ESL-HF

N-Channel
RoHS Device
Halogen Free

Features

- Low on-resistance.
- Low input capacitance.
- Fast switching speed.
- ESD protection up to 1.5kV (human body mode).
- AEC-Q101 Qualified.

DFN1006-3



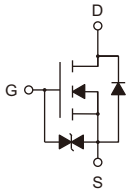
Dimensions in inches and (millimeters)

Mechanical data

- Case: DFN1006-3, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin-plated leads, solderability-per MIL-STD-202, method 208.

Circuit Diagram

- G : Gate
- S : Source
- D : Drain



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	50	V
Gate-source voltage	V_{GSS}	±20	V
Continuous drain current (Note 1)	I_D	360	mA
Pulsed drain current	I_{DM}	1200	mA
Single pulse avalanche energy (Note 4)	E_{AS}	0.2	mJ
Power dissipation (Note 1)	P_D	0.15	W
Thermal resistance junction to air (Note 1)	$R_{\theta JA}$	834	°C/W
Thermal resistance junction to lead (Note 1)	$R_{\theta JL}$	500	
Thermal resistance junction to case (Note 1)	$R_{\theta JC}$	421	
Operating junction temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°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	50			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 50V, V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±10	μA
On Characteristics (Note 2)						
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5A		1	1.6	Ω
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.2A		1.2	2.5	Ω
	$R_{DS(on)}$	V_{GS} = 2.5V, I_D = 0.1A		1.7	4.5	Ω
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.8	1	1.5	V
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		51		pF
Output capacitance	C_{oss}			17		
Reverse transfer capacitance	C_{rss}			9		
Total gate charge	Q_g	V_{DS} = 25V, V_{GS} = 10V, I_D = 0.2A		4		nC
Gate to source charge	Q_{gs}			0.5		
Gate to drain (miller) charge	Q_{gd}			0.4		
Switching Characteristics (Note 3)						
Turn-on delay time	$t_{d(on)}$	V_{DD} = 25V, I_D = 0.36A V_{GS} = 10V, R_G = 6Ω		2.2		ns
Turn-on rise time	t_r			19.2		
Turn-off delay time	$t_{d(off)}$			6.2		
Turn-off fall time	t_f			23		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 1)	V_{SD}	I_S = 0.5A, V_{GS} = 0V		0.89	1.4	V
Maximum continuous drain source diode forward current	I_S				0.36	A
Reverse recovery time	t_{rr}	I_F = 1A, dI_F/d_t = 100A/μs		20		ns
Reverse recovery change	Q_{rr}			10.7		nC

Notes: 1. Surface mounted on FR4 board, and standard footprint, t ≤ 10 sec.
2. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.
3. Guaranteed by design, not subject to production.
4. The E_{AS} data shows Max. rating. The test condition is V_{DS}=48V, V_{GS}=10V, L=0.5mH, R_G=25Ω.

Rating and Characteristic Curves (ABSS138ESL-HF)

Fig.1 - Output Characteristics

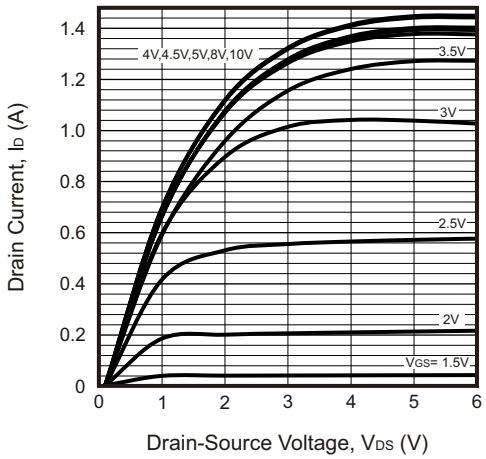


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

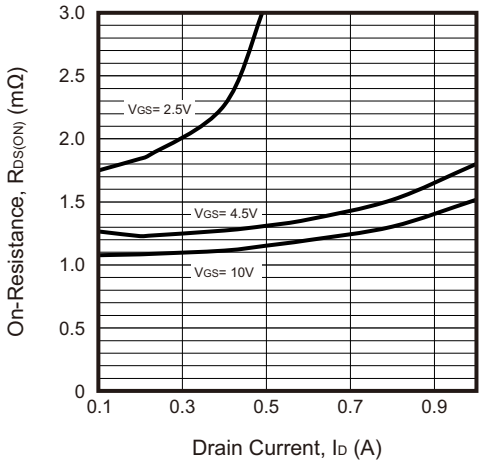


Fig.3 - On-Resistance vs. Gate-Source Voltage

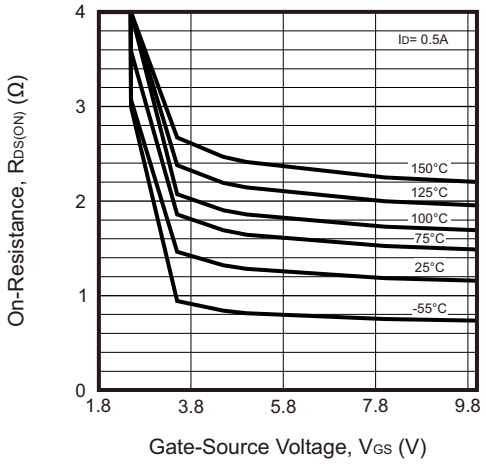


Fig.4 - Body-Diode Characteristics

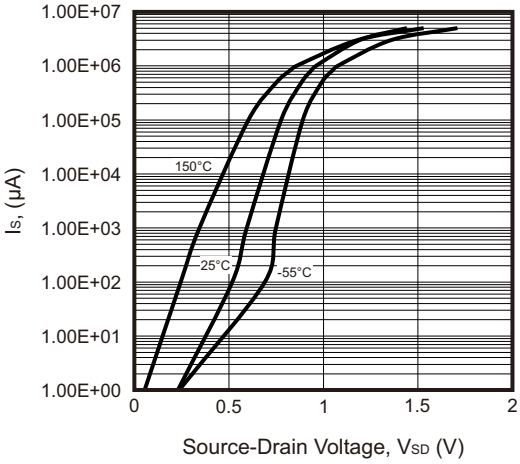


Fig.5 - On-Resistance vs. Junction Temperature

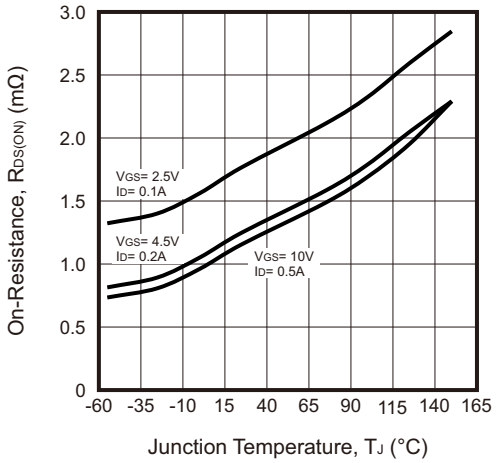
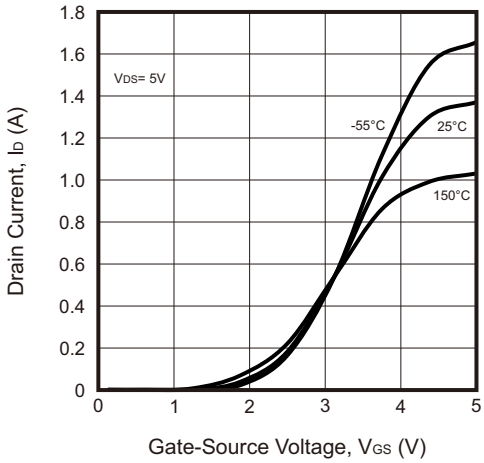


Fig.6 - Transfer Characteristics



Rating and Characteristic Curves (ABSS138ESL-HF)

Fig.7 - Gate Voltage vs. Junction Temperature

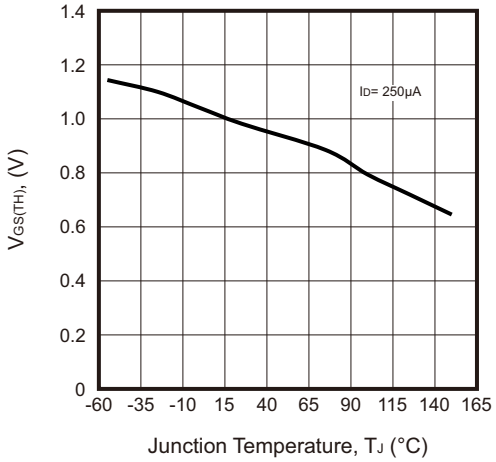


Fig.8 - Drain Source vs. Junction Temperature

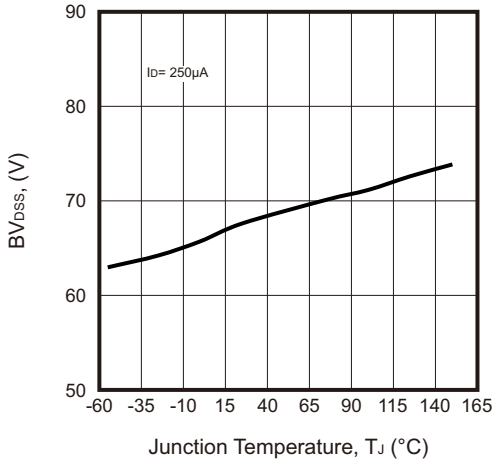


Fig.9 - Capacitance Characteristics

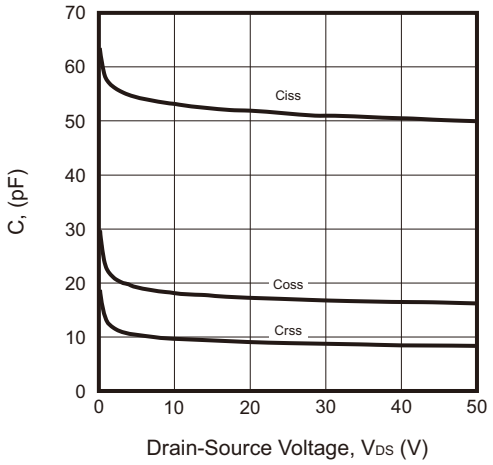
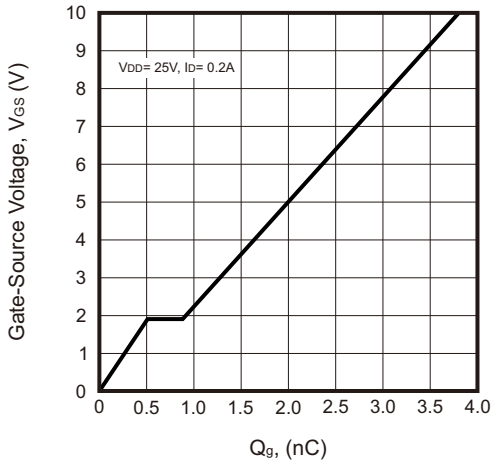
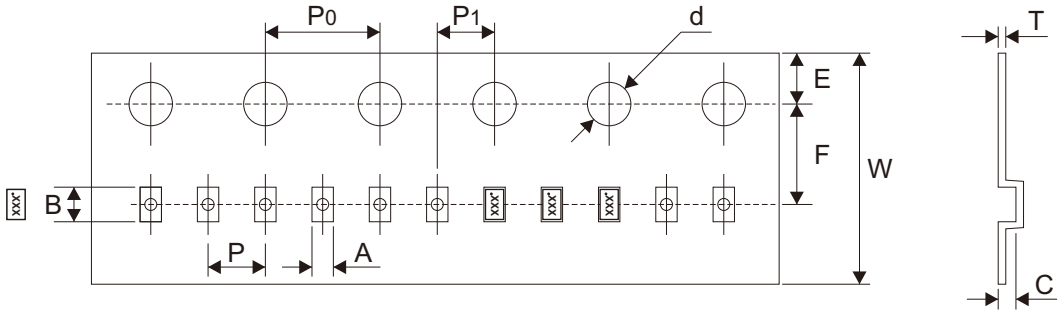
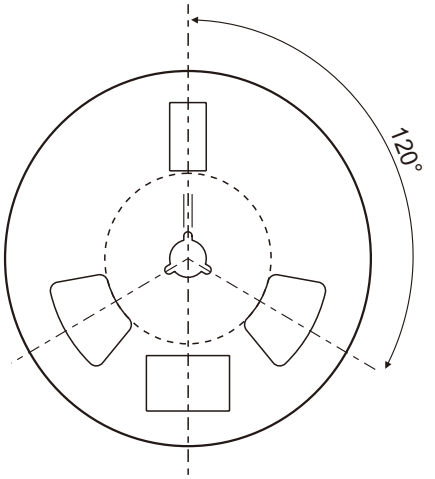


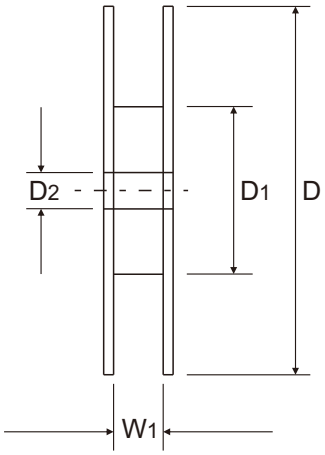
Fig.10 - Gate-Charge Characteristics

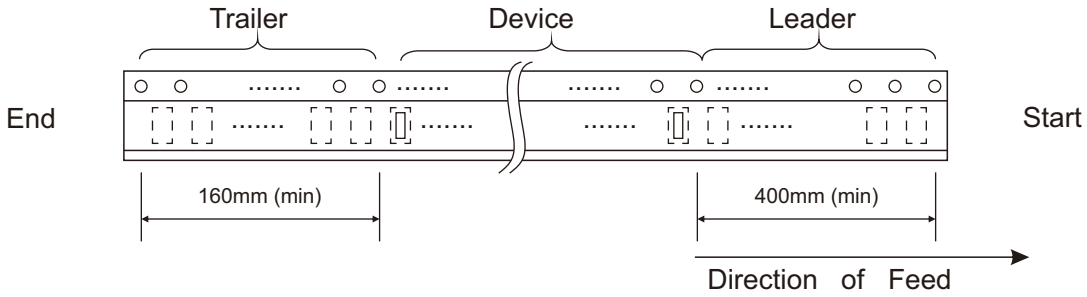


Reel Taping Specification









	SYMBOL	A	B	C	d	D	D1	D2
DFN1006-3	(mm)	0.66 ± 0.10	1.15 ± 0.02	0.66 ± 0.10	1.50 ± 0.10	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.026 ± 0.004	0.045 ± 0.001	0.026 ± 0.004	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

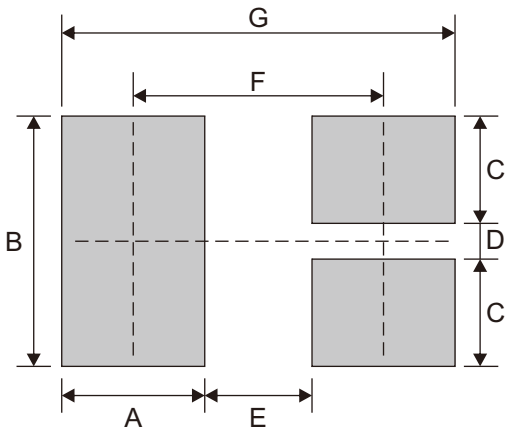
	SYMBOL	E	F	P	P0	P1	T	W	W1
DFN1006-3	(mm)	1.75 ± 0.05	3.50 ± 0.05	2.00 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	0.20 ± 0.02	8.00 + 0.30 − 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.002	0.138 ± 0.002	0.079 ± 0.002	0.157 ± 0.004	0.079 ± 0.002	0.008 ± 0.001	0.315 + 0.012 − 0.004	0.374 ± 0.039

Marking Code

Part Number	Marking Code
ABSS138ESL-HF	MM5

Suggested P.C.B. PAD Layout

SIZE	DFN1006-3	
	(mm)	(inch)
A	0.40	0.016
B	0.70	0.028
C	0.30	0.012
D	0.10	0.004
E	0.30	0.012
F	0.70	0.028
G	1.10	0.043



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
DFN1006-3	10,000	7