N-Channel Enhancement Mode MOSFET

BL1014DW

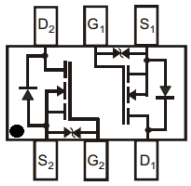
Features

- N-Channel switch with low $R_{DS(on)}$
- Operated at low logic level gate drive
- HBM: JESD22-A114-B: 1C
- RoHS compliant with Halogen-free

HF

Mechanical Data

- Case: SOT-363
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



SOT-363

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL1014DW	SOT-363	3000 pcs / Tape & Reel	KM

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	30	V
Gate-to-Source Voltage	V_{GSS}	±12	V
Continuous Drain Current (T_A = 25°C) *1	I_D	0.6	A
Pulsed Drain Current (t_p =10μs, T_A = 25°C)	I_{DM}	1.8	A
Single Pulse Avalanche Energy (L = 10mH) *3	E_{AS}	2	mJ
Power Dissipation (T_A = 25°C)	P_D	0.35	W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	-	-	357	°C/W

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 30V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±10V, V_{DS} = 0V	-	-	±3	μA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *2	V_{GS} = 4.5V,I_D = 0.6A	-	335	420	mΩ
		V_{GS} = 2.5V,I_D = 0.3A	-	404	540	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	0.5	0.95	1.5	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	64	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 10V f = 1.0MHz	-	73	-	pF
C_{OSS}	Output Capacitance		-	29	-	
C_{RSS}	Reverse Transfer Capacitance		-	16	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time *4	V_{DS} = 15V V_{GS} = 4.5V R_G = 51Ω I_D = 0.7A	-	5	-	ns
t_r	Turn-on Rise Time *4		-	8.2	-	
$t_{d(OFF)}$	Turn-Off Delay Time *4		-	23	-	
t_f	Turn-Off Fall Time *4		-	41	-	
Q_G	Total Gate-Charge	V_{DS} = 15V V_{GS} = 4.5V I_D = 0.8A	-	2.23	-	nC
Q_{GS}	Gate to Source Charge		-	0.63	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	0.38	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *2	I_{SD} = 0.6A, V_{GS} = 0V	-	0.9	1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch^2 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} = 15V, V_{GS} = 6V, L = 10mH
4. Guaranteed by design, not subject to production

Ratings and Characteristic Curves (@ T_A = 25°C unless otherwise specified)

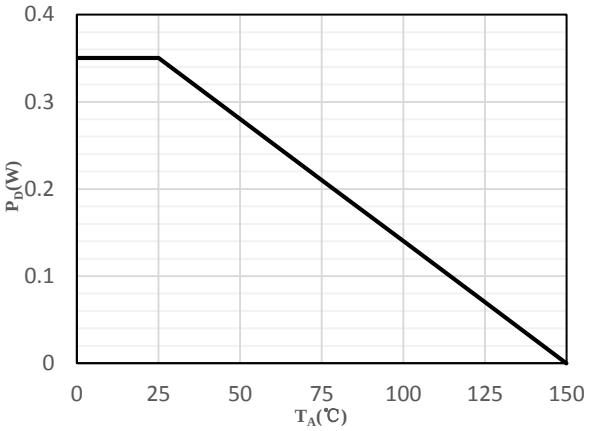


Fig 1 Power Dissipation

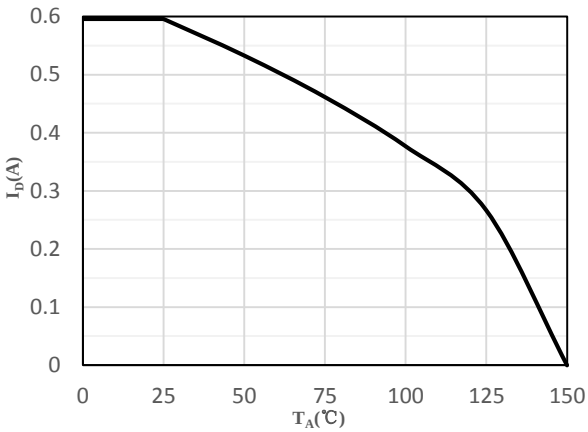


Fig 2 Drain Current

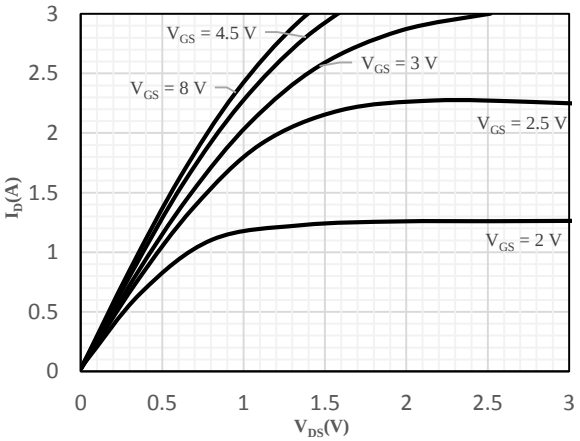


Fig 3 Output Characteristics

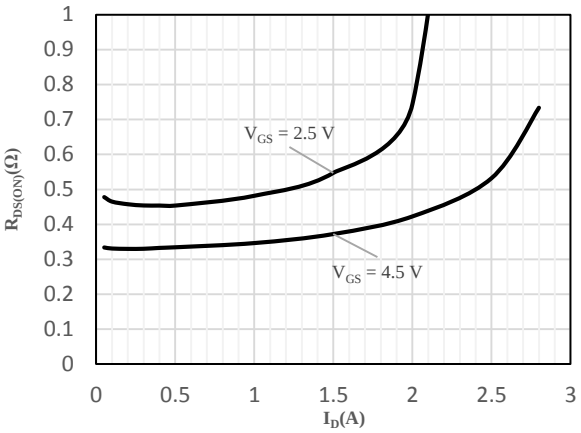


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

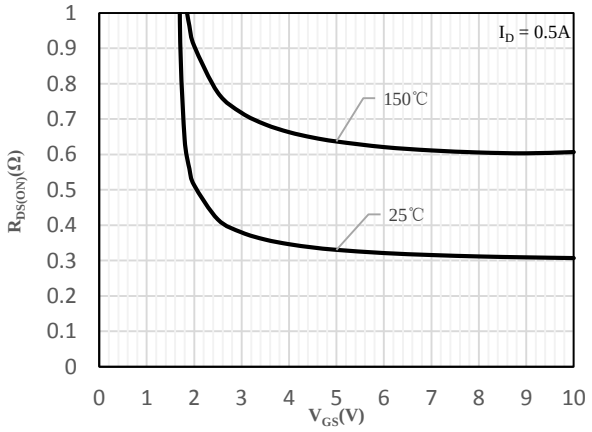


Fig 5 On-Resistance vs. Gate-Source Voltage

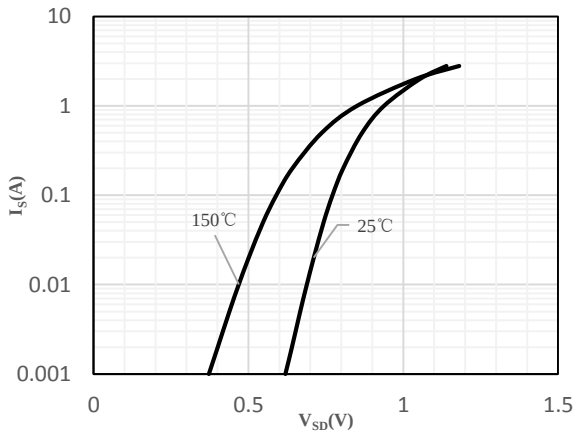


Fig 6 Body-Diode Characteristics

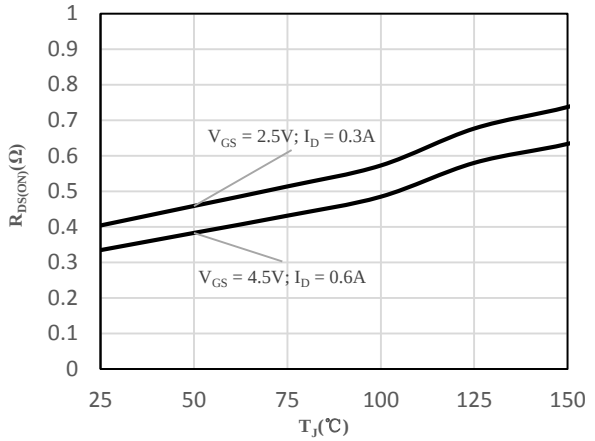


Fig 7 On-Resistance vs. Junction Temperature

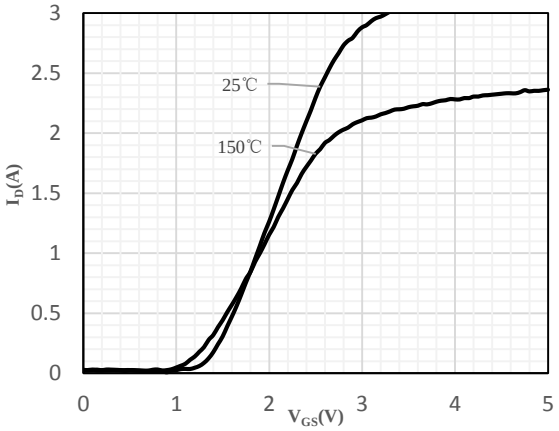


Fig 8 Transfer Characteristics

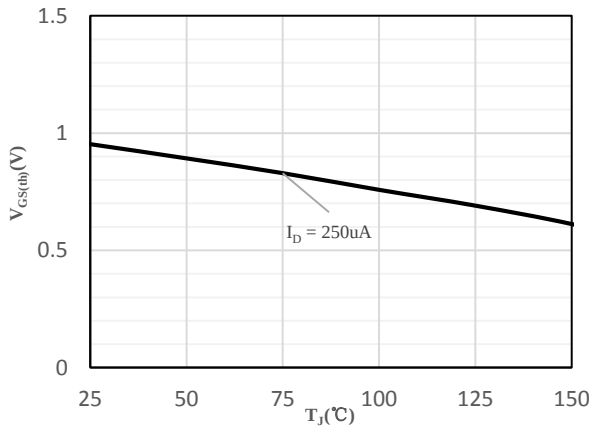


Fig 9 Gate Voltage vs. Junction Temperature

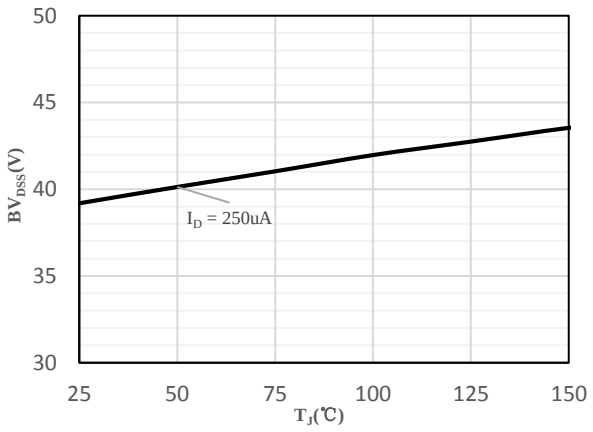


Fig 10 Drain-Source vs. Junction Temperature

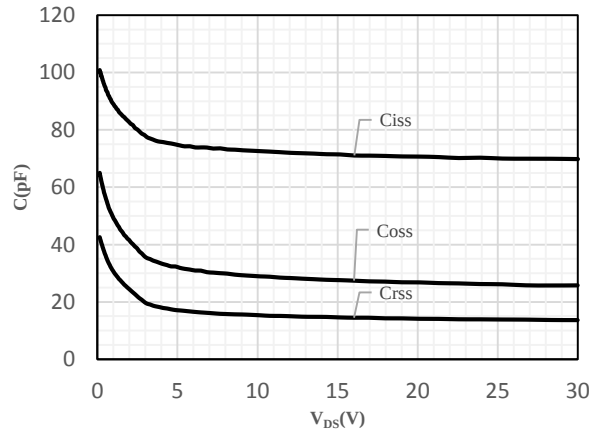


Fig 11 Capacitance Characteristics

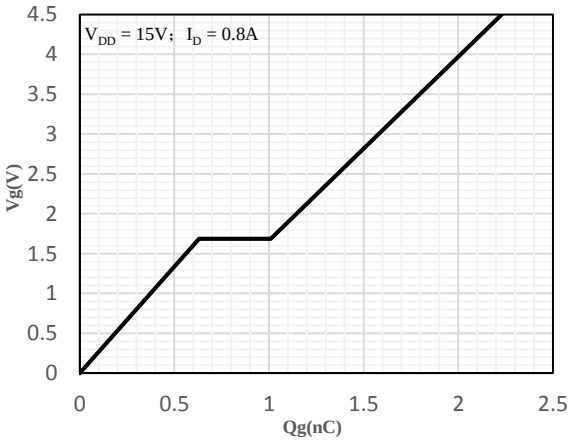
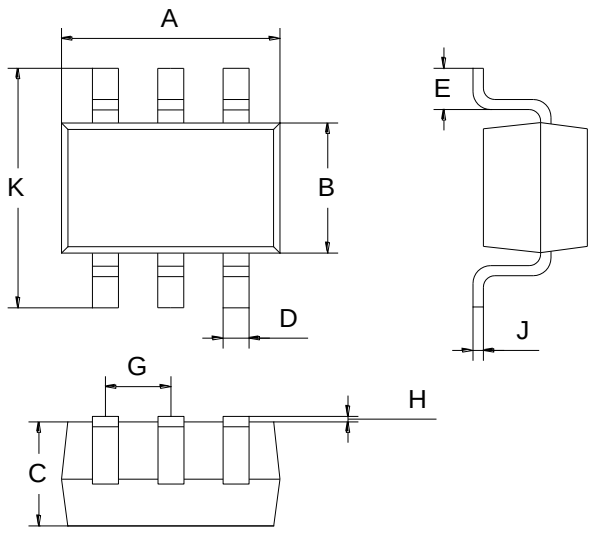


Fig 12 Gate-Charge Characteristics

Package Outline Dimensions (Unit: mm)



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Dimension	**Min.**	**Max.**
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout (Unit: mm)

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