

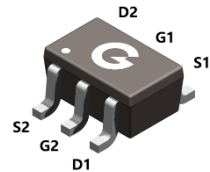
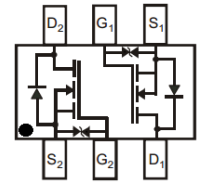
Features

- N-Channel switch with low $R_{DS(on)}$
- Operated at low logic level gate drive
- HBM: AEC-Q101-001: H1C (JESD22-A114-B: 1C)
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

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
TBL1014DW	SOT-363	3000 pcs / Tape & Reel	KM

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

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

Thermal Characteristics

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

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ 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 inch² FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
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 (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

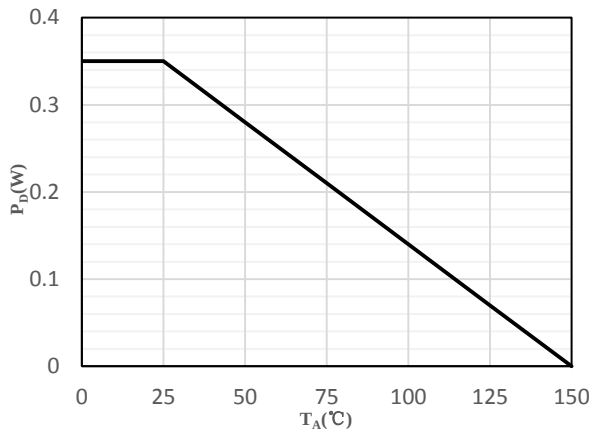


Fig 1 Power Dissipation

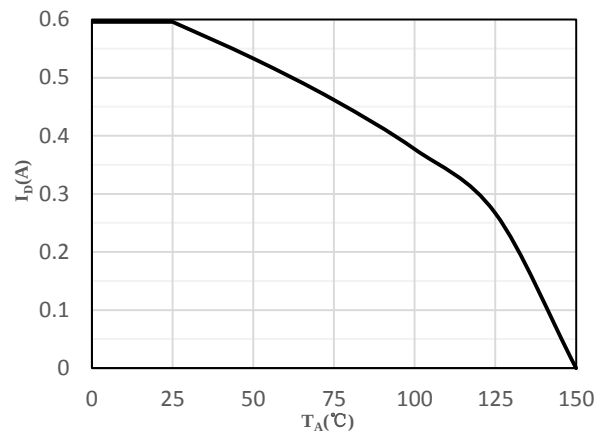


Fig 2 Drain Current

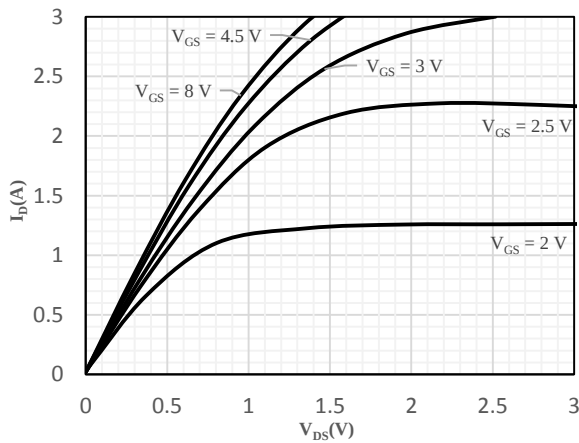


Fig 3 Output Characteristics

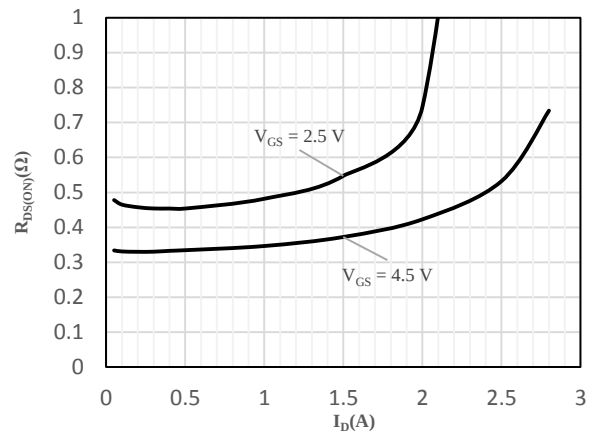


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

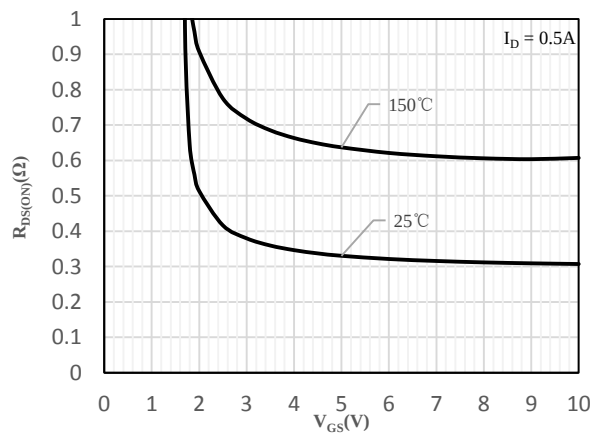


Fig 5 On-Resistance vs. Gate-Source Voltage

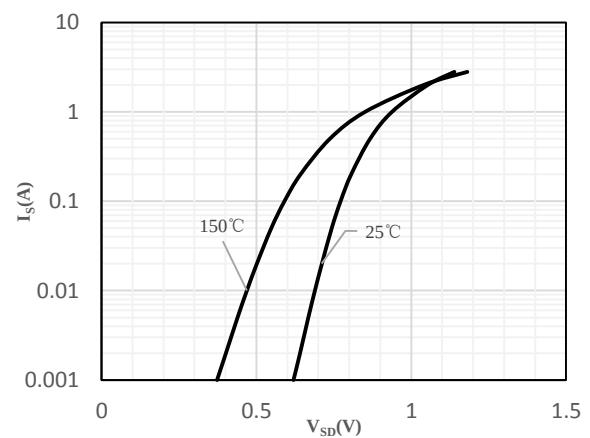


Fig 6 Body-Diode Characteristics

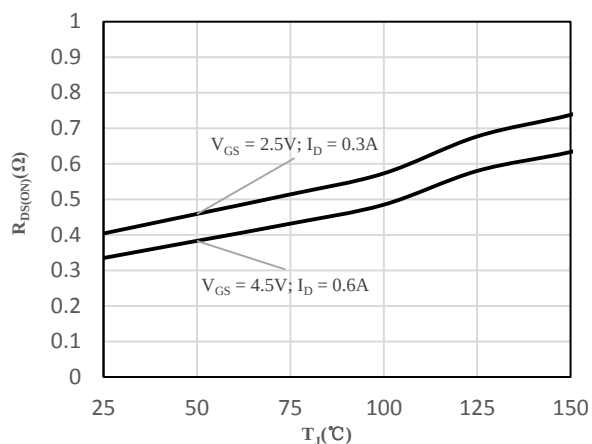


Fig 7 On-Resistance vs. Junction Temperature

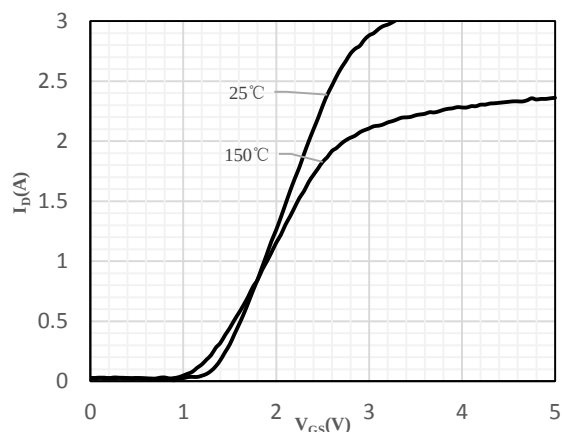


Fig 8 Transfer Characteristics

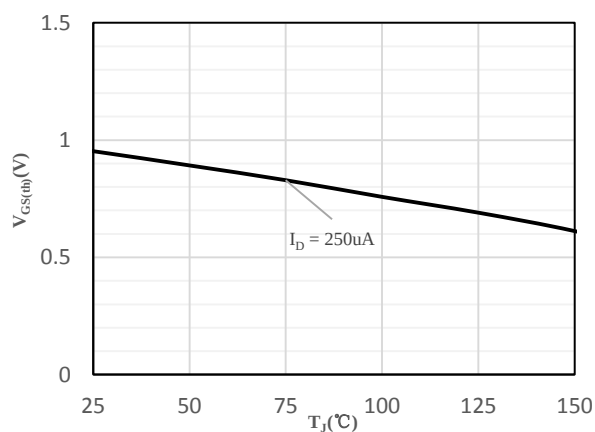


Fig 9 Gate Voltage vs. Junction Temperature

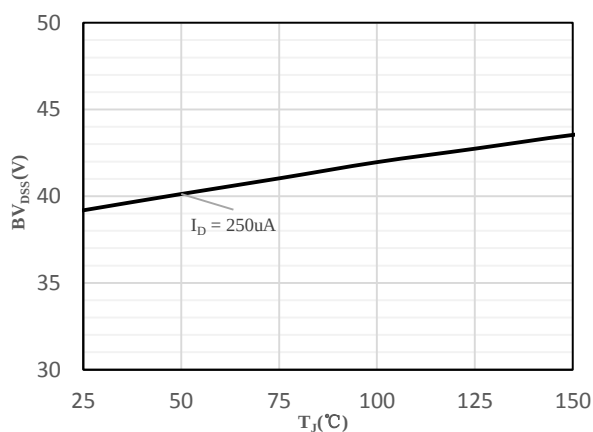


Fig 10 Drain-Source vs. Junction Temperature

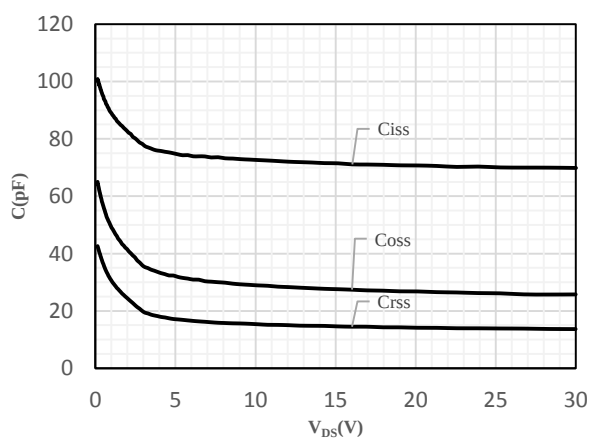


Fig 11 Capacitance Characteristics

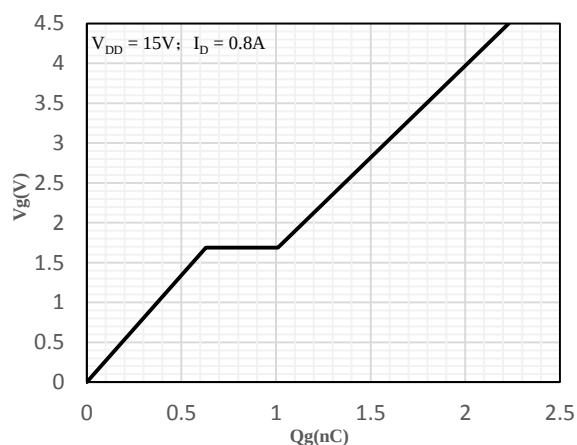
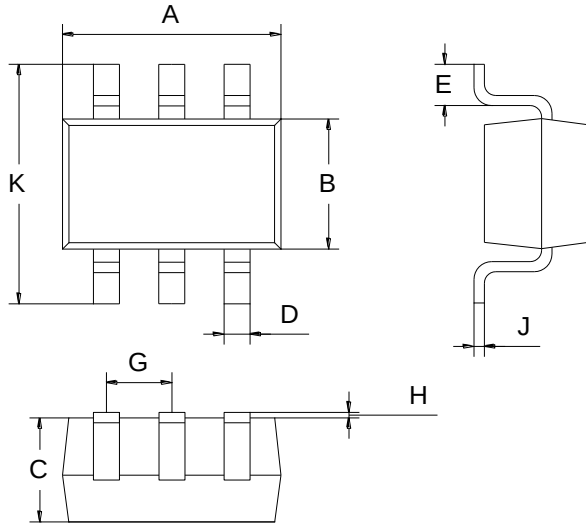


Fig 12 Gate-Charge Characteristics

Package Outline Dimensions (Unit: mm)



SOT-363		
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)

SOT-363

