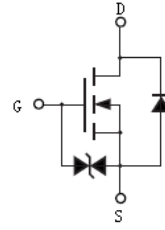


Features

- Low power loss by high speed switching and low on-resistance
- Excellent thermal behavior
- Very low FOM for fast switching efficiency
- Product validation acc. JEDEC Standard
- Integrated ESD protection diode: HBM: JESD22-A114-B: 2
- RoHS compliant with Halogen-free

HF

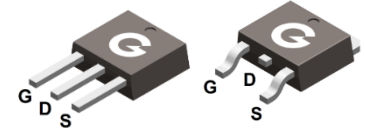


Applications

- PFC power supply stages
- Lighting applications
- Adapter
- Charger

Mechanical Data

- Case: TO-251, TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



SJM70R900I

SJM70R900D

TO-251

TO-252

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJM70R900I	TO-251	80 pcs / Tube	SJM70R900I
SJM70R900D	TO-252	80 pcs / Tube & 2500 pcs / Tape & Reel	SJM70R900D

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	700	V
Gate-to-Source Voltage (Static)	V _{GSS}	±20	V
Continuous Drain Current (T _C = 25°C)	I _D	6	A
Continuous Drain Current (T _C = 100°C)		3.8	A
Pulsed Drain Current (t _p = 10μs, T _C = 25°C)	I _{DM}	24	A
Single Pulse Avalanche Energy ^{*3}	E _{AS}	95	mJ
Power Dissipation (T _C = 25°C)	P _D	63	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-Case	R _{θJC}	-	1.5	2	°C/W
Thermal Resistance Junction-to-Air ^{*1}	R _{θJA}	-	-	62	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	700	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 700V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±1	μA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *2	V _{GS} = 10V, I _D = 1.5A	-	0.75	0.9	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	3.3	4	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	7.7	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	475	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 40V	-	94	-	
C _{RSS}	Reverse Transfer Capacitance	f = 250kHz	-	1.7	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = 350V R _G = 25Ω I _D = 2.2A	-	21	-	ns
t _r	Turn-on Rise Time *4		-	19	-	
t _{d(OFF)}	Turn-Off Delay Time *4		-	62	-	
t _f	Turn-Off Fall Time *4		-	19	-	
Q _G	Total Gate-Charge	V _{DD} = 560V	-	14.2	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	2.4	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 3A	-	7.6	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 3A, V _{GS} = 0V	-	0.84	1.4	V
t _{rr}	Reverse Recovery Time	I _F = 2A, V _R = 400V	-	193	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	-	1.1	-	μC

Notes:

- The data tested by surface mounted on a minimum recommended FR-4 board
- The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 100\text{V}, V_{GS} = 15\text{V}, L = 50\text{mH}$
- Guaranteed by design, not subject to production

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

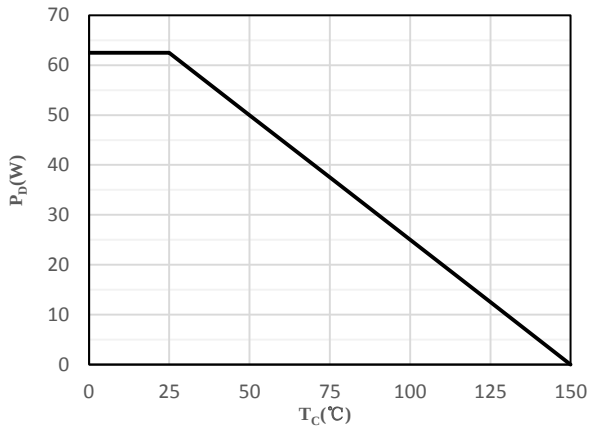


Fig 1 Power Dissipation

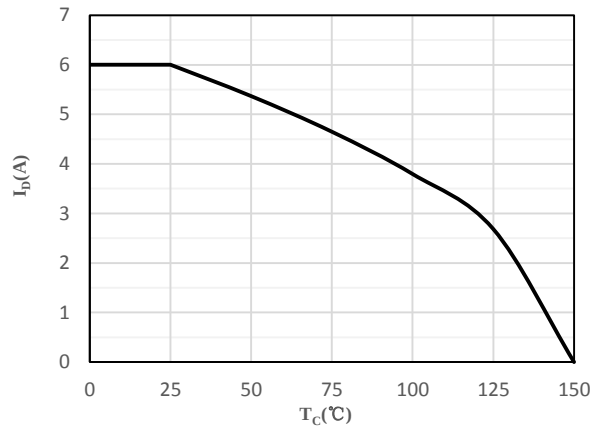


Fig 2 Drain Current

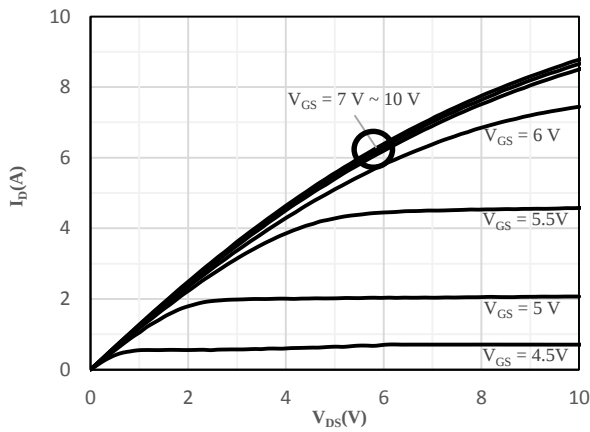


Fig 3 Typical Output Characteristics

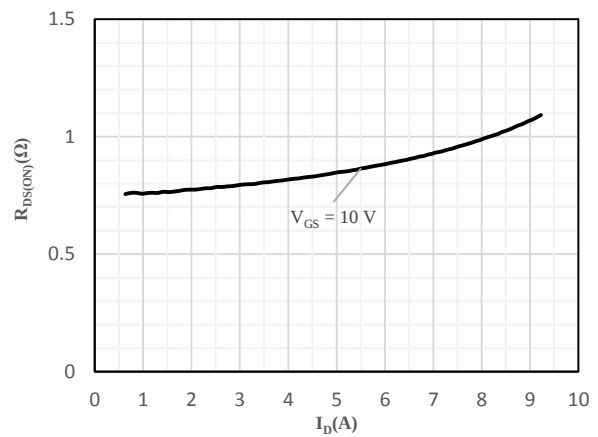


Fig 4 On-Resistance vs. Drain Current
and Gate Voltage

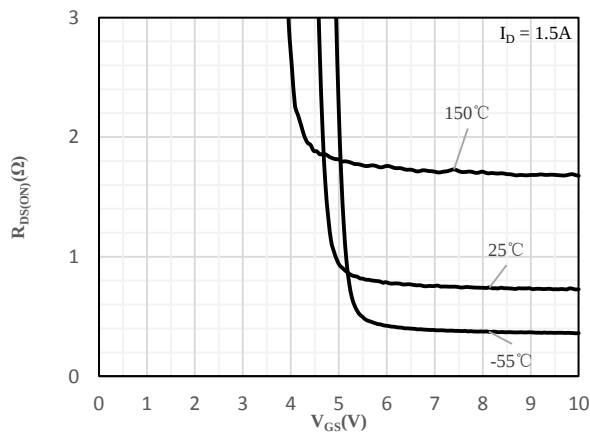


Fig 5 On-Resistance vs. Gate-Source Voltage

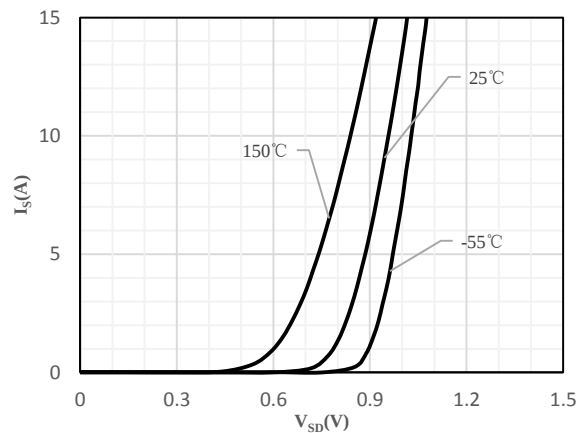


Fig 6 Body-Diode Characteristics

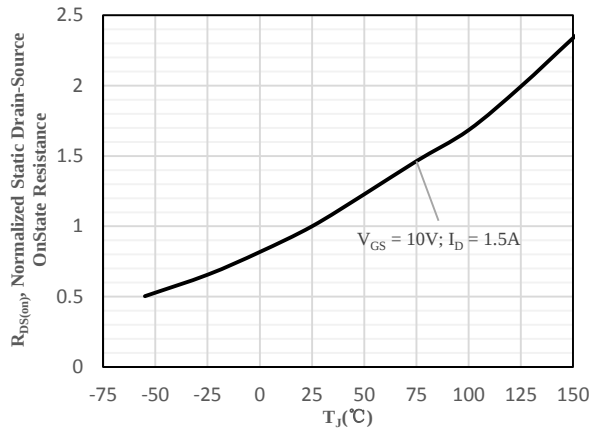


Fig 7 Normalized On-Resistance vs. Junction Temperature

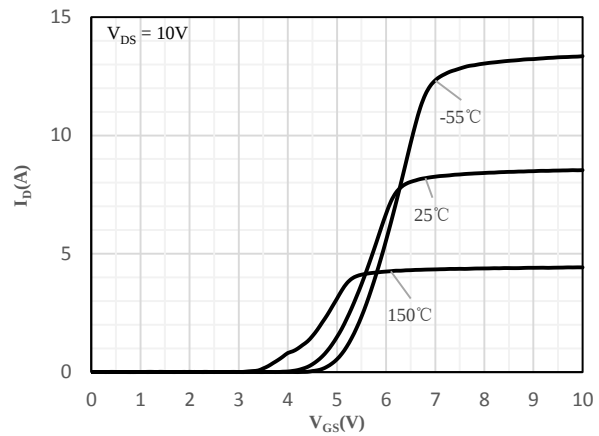


Fig 8 Transfer Characteristics

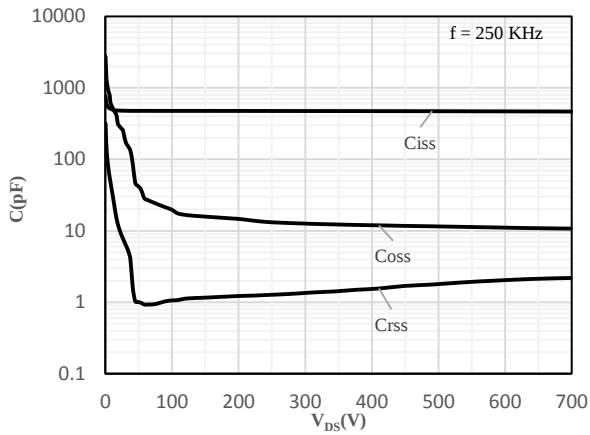


Fig 9 Capacitance Characteristics

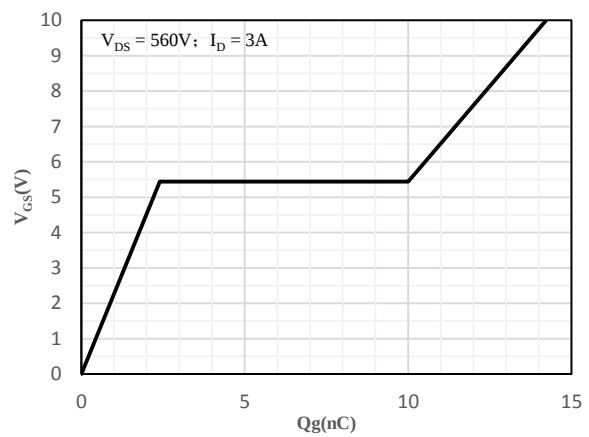


Fig 10 Gate-Charge Characteristics

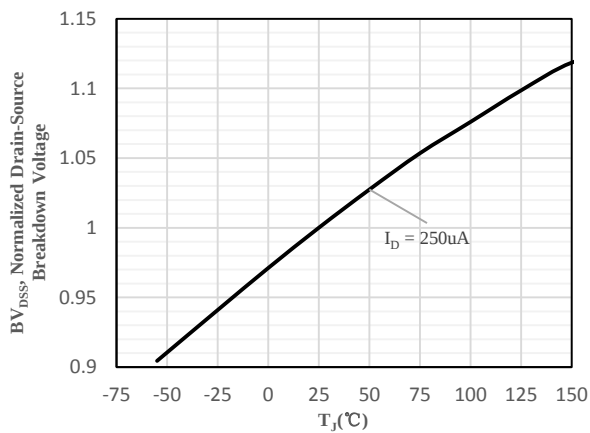


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

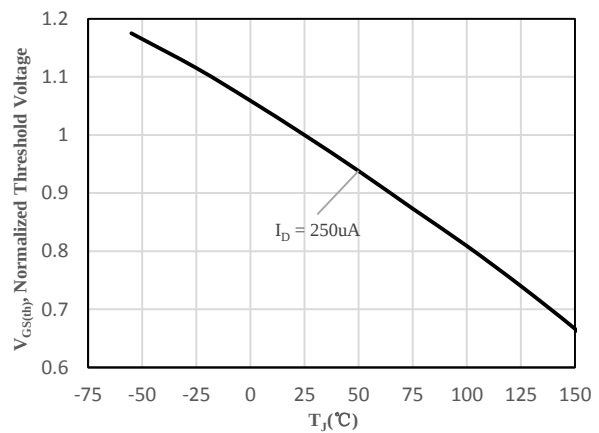
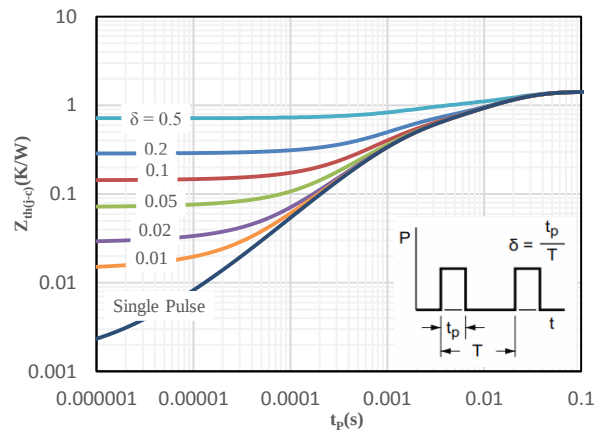
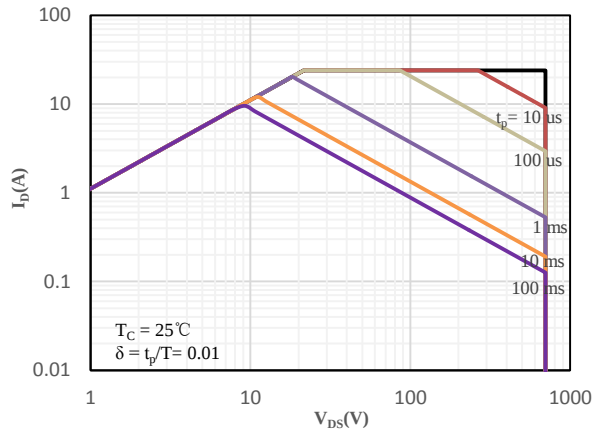
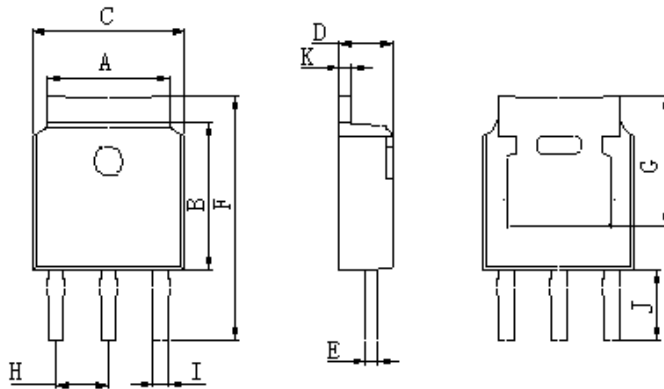


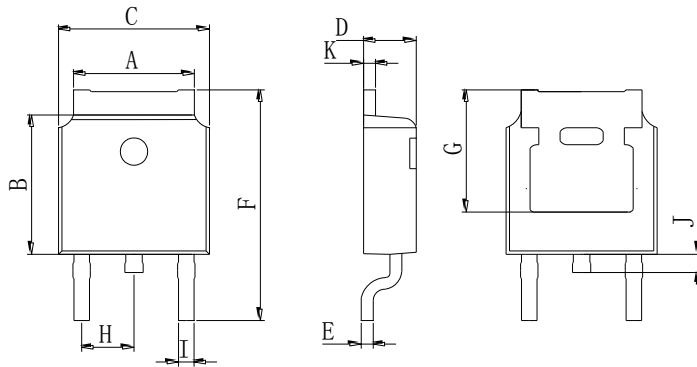
Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature



Package Outline Dimensions (Unit: mm)



TO-251		
Dimension	Min.	Max.
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	11.00	11.60
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	4.00	4.40
K	0.40	0.60



TO-252		
Dimension	Min.	Max.
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	9.71	10.31
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	0.50	0.70
K	0.40	0.60

Mounting Pad Layout (Unit: mm)

TO-252

