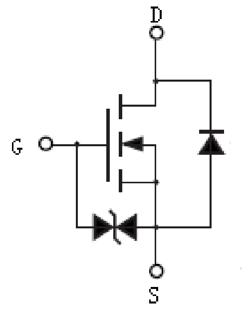
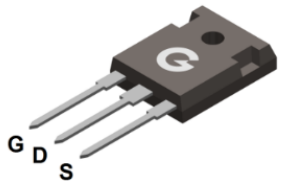
Features

- 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





TO-247

Applications

- LED lighting
- Adapters
- Chargers
- Industrial power
- PFC stage

Mechanical Data

- Case: TO-247
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJM80R380U	TO-247	30 pcs / Tube	SJM80R380U

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	800	V
Gate-to-Source Voltage (Static)	V_{GSS}	±20	V
Continuous Drain Current (T_C = 25°C)	I_D	13	A
Continuous Drain Current (T_C = 100°C)		8.2	A
Pulsed Drain Current (t_p = 10μs, T_C = 25°C)	I_{DM}	52	A
Single Pulse Avalanche Energy ^{*2}	E_{AS}	300	mJ
Power Dissipation (T_C = 25°C)	P_D	156	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	$R_{\theta JC}$	-	0.6	0.8	°C/W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	-	-	40	°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	800	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 800V, 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 [*1]	V_{GS} = 10V, I_D = 4A	-	0.31	0.38	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	3.2	4	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	3.9	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 40V f = 250kHz	-	1266	-	pF
C_{OSS}	Output Capacitance		-	114	-	
C_{RSS}	Reverse Transfer Capacitance		-	4.6	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 400V V_{GS} = 15V I_D = 4A R_G = 3.3Ω	-	21	-	ns
t_r	Turn-on Rise Time		-	29	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	58	-	
t_f	Turn-Off Fall Time		-	83	-	
Q_G	Total Gate-Charge	V_{DD} = 640V V_{GS} = 10V I_D = 6.5A	-	33	-	nC
Q_{GS}	Gate to Source Charge		-	4.6	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	12.6	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage [*1]	I_{SD} = 6.5A, V_{GS} = 0V	-	0.84	1.2	V
t_{rr}	Reverse Recovery Time	I_F = 4A, V_R = 400V d_i/d_t = 100A/μs	-	295	-	ns
Q_{rr}	Reverse Recovery Charge		-	2.9	-	μC

Notes:
1. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
2. The E_{AS} data shows Max. rating. The test condition is V_{DD} = 100V, V_{GS} = 10V, L = 50mH

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

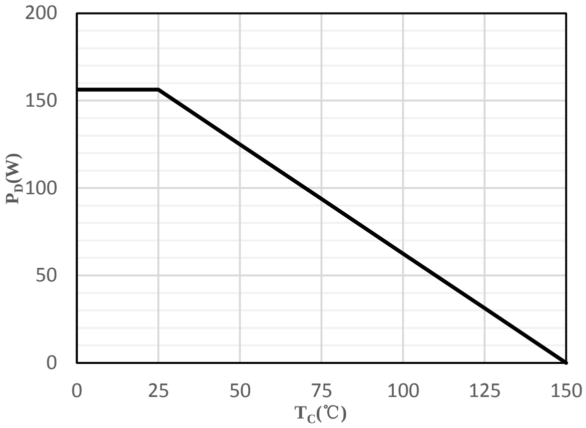


Fig 1 Power Dissipation

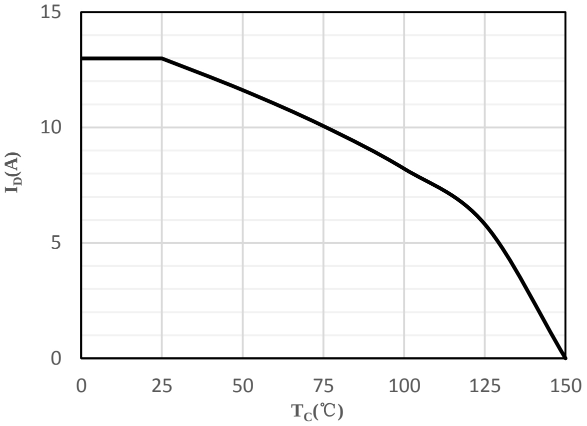


Fig 2 Drain Current

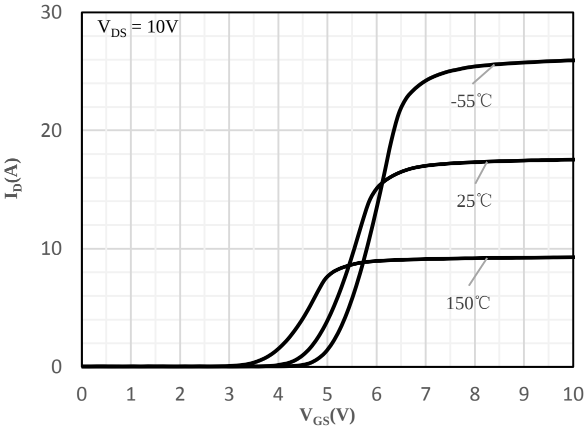


Fig 3 Typical Output Characteristics

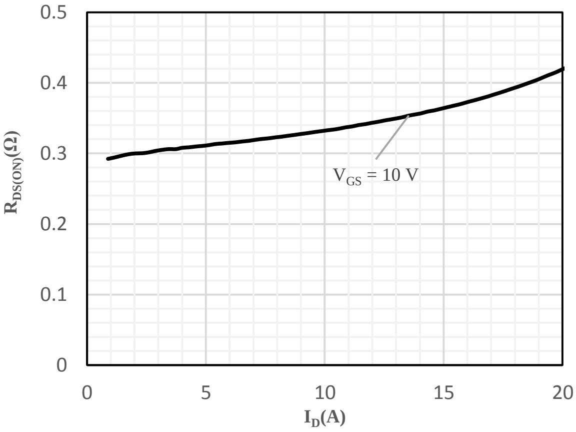


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

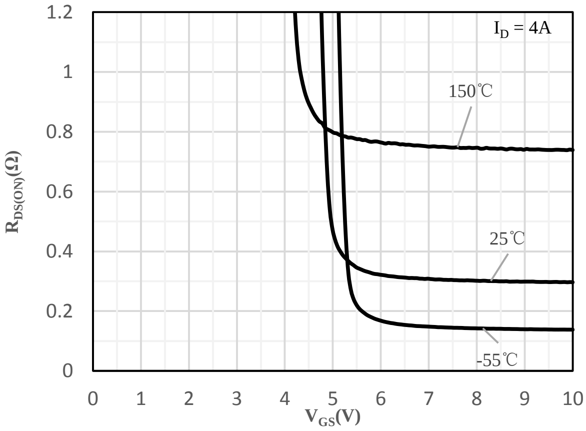


Fig 5 On-Resistance vs. Gate-Source Voltage

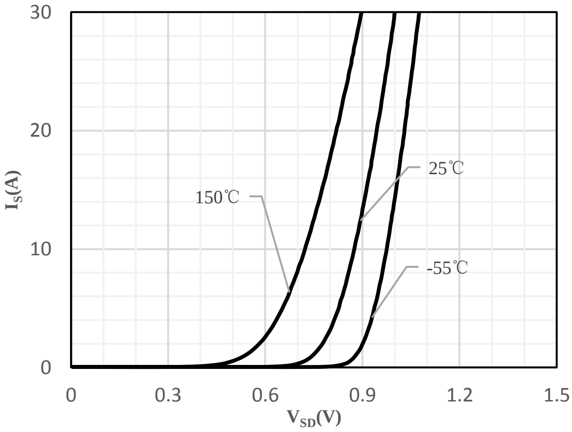


Fig 6 Body-Diode Characteristics

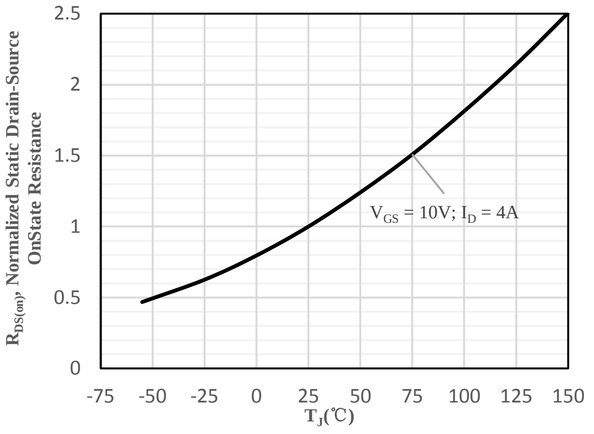


Fig 7 Normalized On-Resistance vs. Junction Temperature

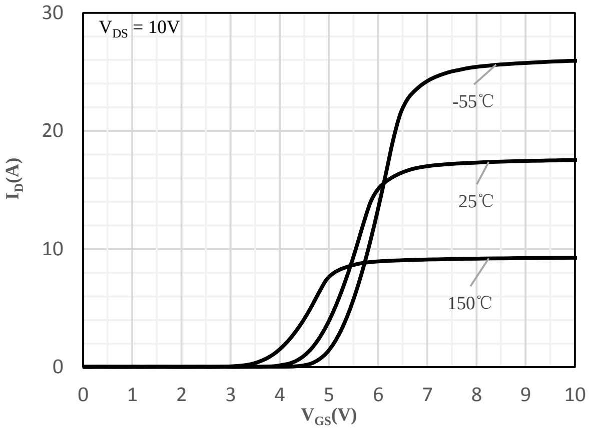


Fig 8 Transfer Characteristics

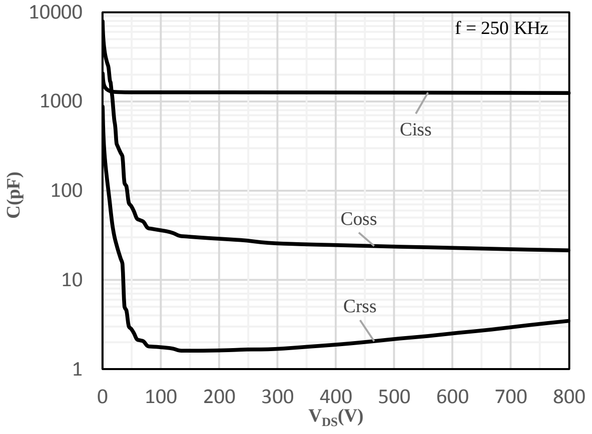


Fig 9 Capacitance Characteristics

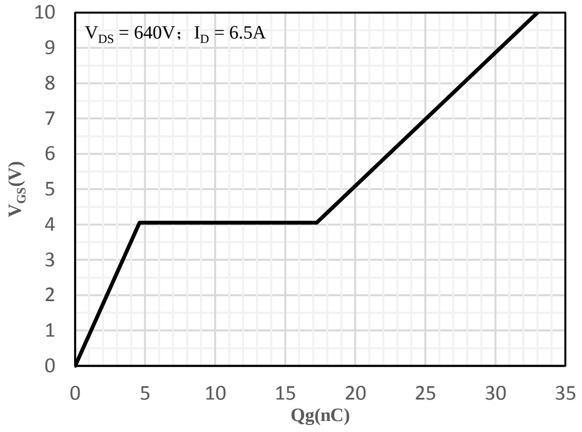


Fig 10 Gate-Charge Characteristics

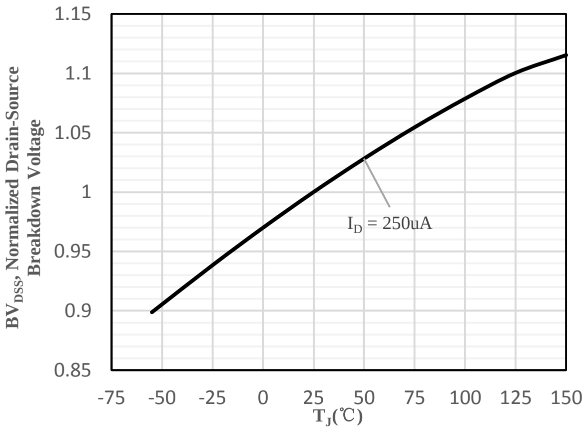


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

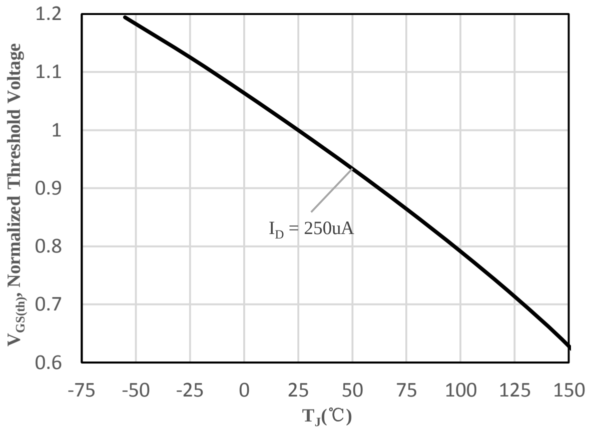


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

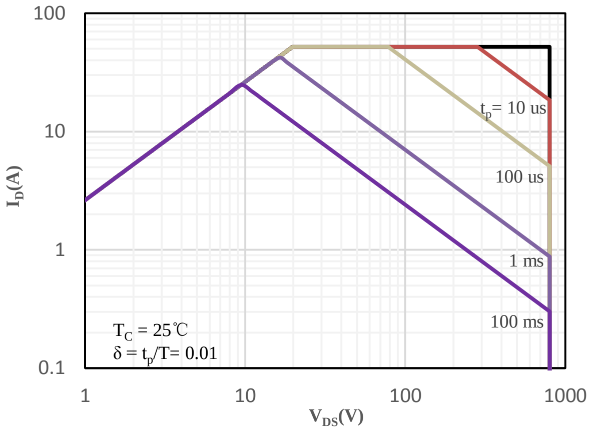


Fig 13 Safe Operating Area

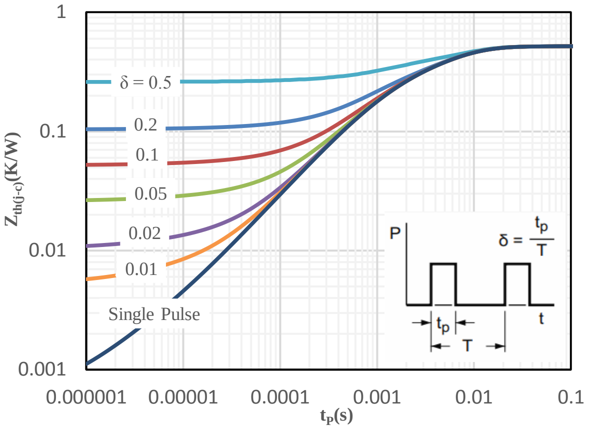
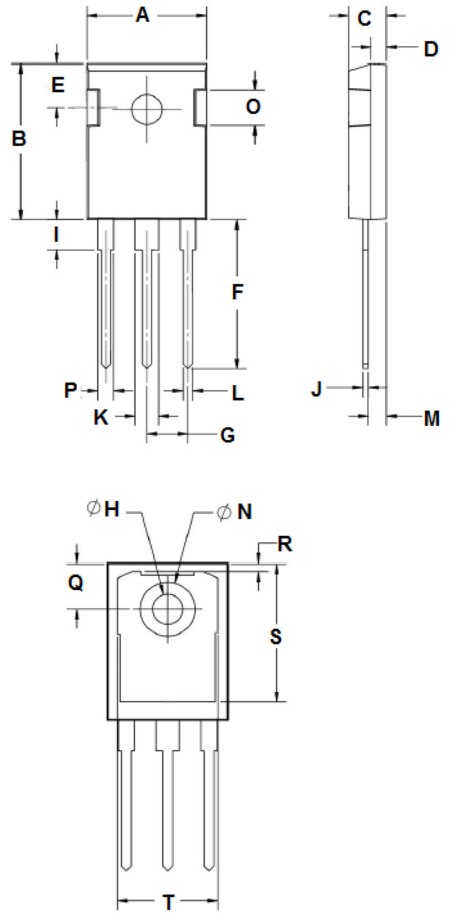


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



TO-247		
Dimension	**Min.**	**Max.**
A	15.50	16.10
B	20.70	21.30
C	4.70	5.30
D	1.80	2.20
E	5.20	5.80
F	19.70	20.30
G	5.20	5.60
H	3.30	3.70
I	3.90	4.30
J	0.50	0.70
K	2.80	3.20
L	1.00	1.40
M	2.20	2.60
N	7.00	7.20
O	4.90	5.30
P	1.80	2.20
Q	5.70	5.90
R	0.80	1.20
S	17.00	17.80
T	13.60	14.20