Super Junction Power MOSFET
SJM60R099F

Features

- Very low FOM $R_{DS(on)} \times Q_G$
- 100% avalanche tested

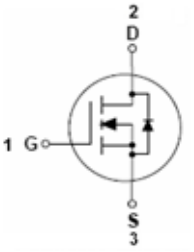
HF

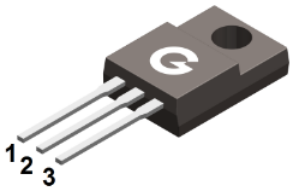
APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)

Mechanical Data

- Case: ITO-220AB
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208





ITO-220AB

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJM60R099F	ITO-220AB	50 pcs / Tube	SJM60R099F

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	600	V
Gate-to-Source Voltage	V_{GSS}	±30	V
Continuous Drain Current (T_C = 25°C)	I_D	13	A
Continuous Drain Current (T_C = 100°C)		8	A
Pulsed Drain Current	I_{DM}	91	A
Single Pulse Avalanche Energy *2	E_{AS}	300	mJ
Power Dissipation (T_C = 25°C)	P_D	43	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	$R_{\theta JC}$	-	-	2.9	°C/W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	-	-	62	°C/W

Electrical Characteristics (@ T_C = 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	600	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 600V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±30V, V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *1	V_{GS} = 10V, I_D = 19A	-	-	99	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.5	4.5	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 400V f = 1.0MHz	-	2270	-	pF
C_{OSS}	Output Capacitance		-	58	-	
C_{RSS}	Reverse Transfer Capacitance		-	3	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time *3	V_{DD} = 400V V_{GS} = 10V R_G = 10Ω I_D = 19A	-	17	-	ns
t_r	Turn-on Rise Time *3		-	10	-	
$t_{d(OFF)}$	Turn-Off Delay Time *3		-	86	-	
t_f	Turn-Off Fall Time *3		-	11	-	
Q_G	Total Gate-Charge	V_{DD} = 400V V_{GS} = 10V I_D = 10A	-	58	-	nC
Q_{GS}	Gate to Source Charge		-	13.5	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	23	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *1	I_{SD} = 19A, V_{GS} = 0V	-	0.9	1.2	V
t_{rr}	Reverse Recovery Time	I_F = 19A, V_{GS} = 0V di/dt = 100 A/μs	-	440	-	ns
Q_{rr}	Reverse Recovery Charge		-	7.2	-	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} = 50V, V_{GS} = 15V, L = 10mH
3. Guaranteed by design, not subject to production

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

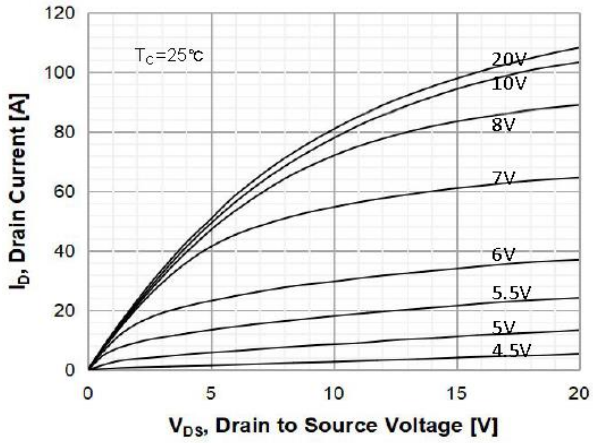


Fig 1 Typical Output Characteristics

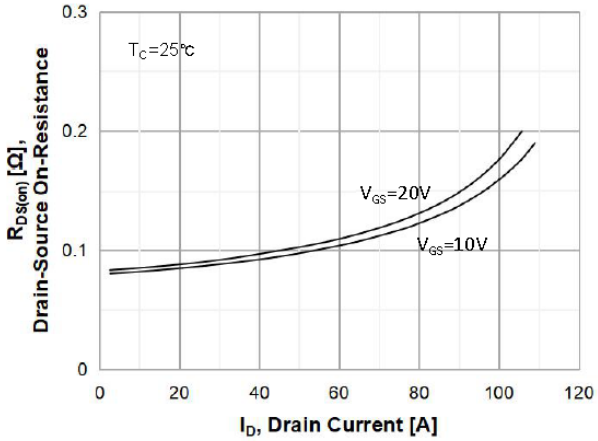


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

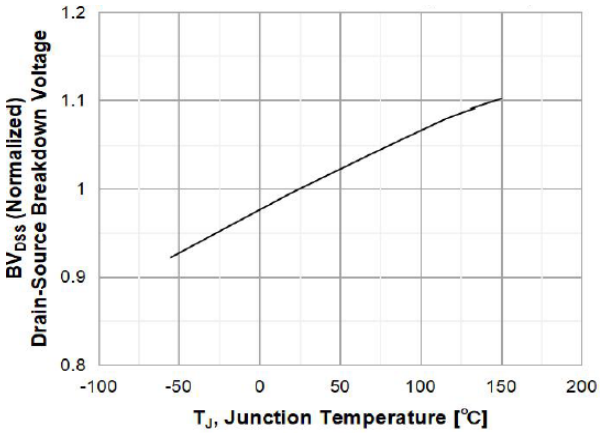


Fig 3 Normalized Breakdown Voltage vs. Junction Temperature

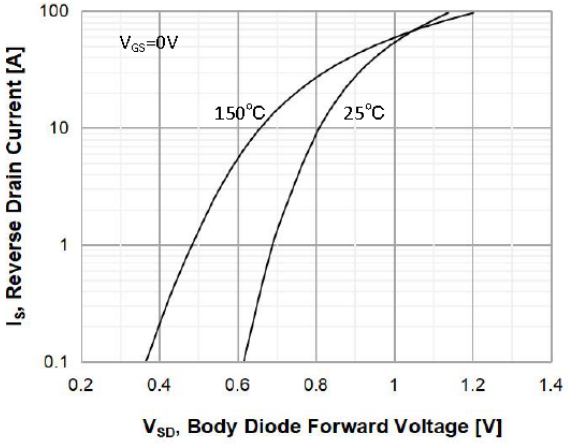


Fig 4 Body-Diode Characteristics

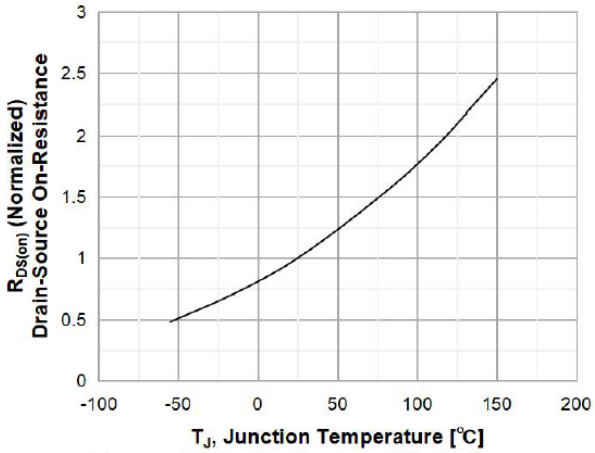


Fig 5 Normalized On-Resistance vs. Junction Temperature

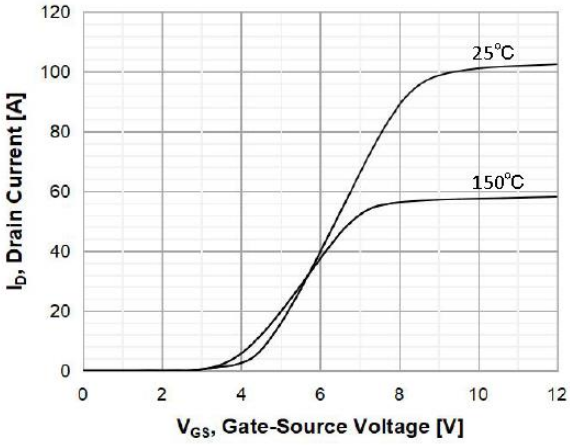


Fig 6 Transfer Characteristics

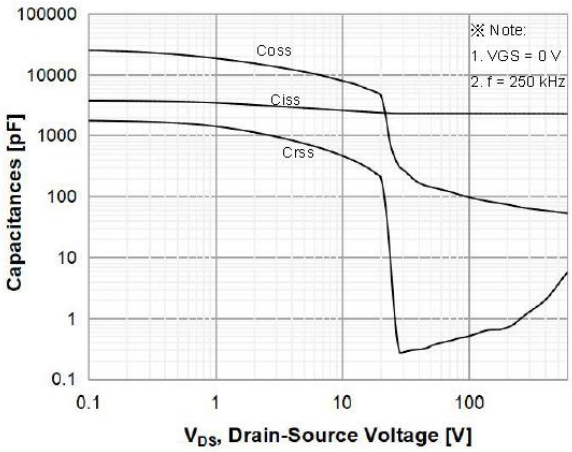


Fig 7 Capacitance Characteristics

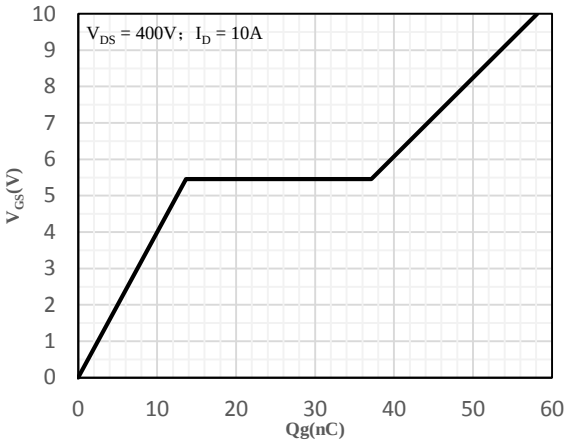


Fig 8 Gate-Charge Characteristics

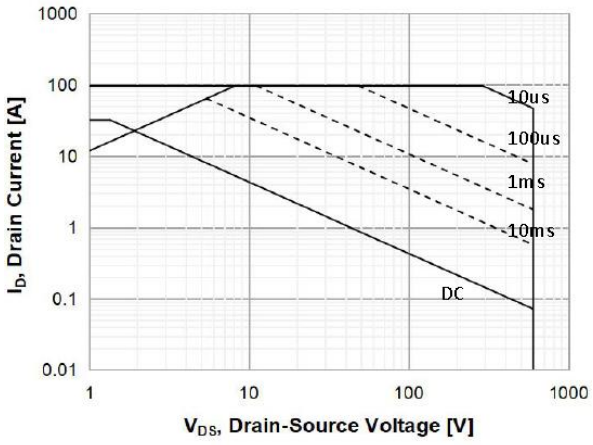


Fig 9 Safe Operation Area

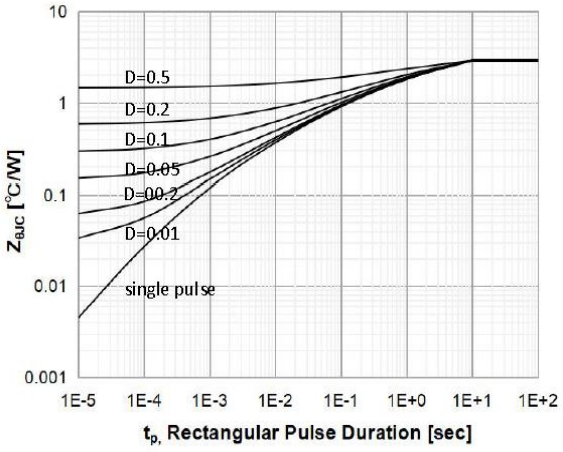
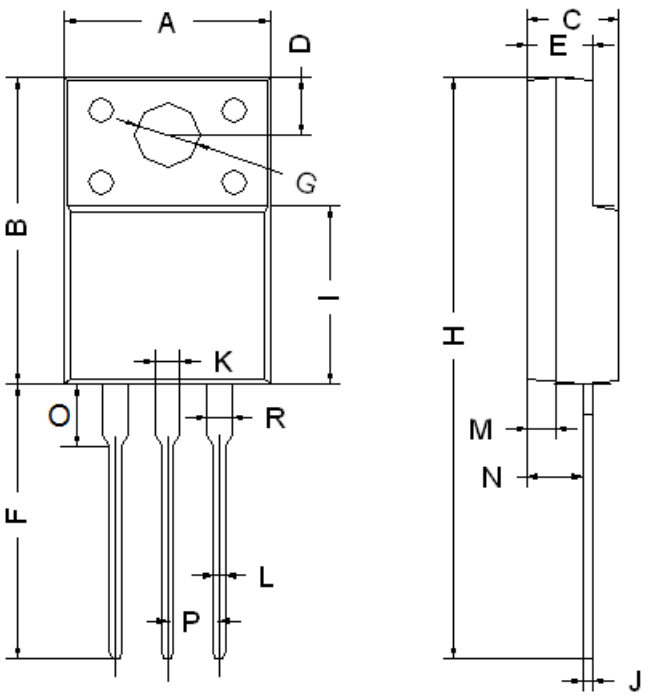


Fig 10 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



ITO-220AB		
Dimension	**Min.**	**Max.**
A	9.90	10.30
B	14.80	15.20
C	4.30	4.70
D	2.50	2.90
E	2.80	3.30
F	13.00	13.60
G	3.10	3.30
H	28.00	28.60
I	7.90	8.90
J	0.40	0.60
L	0.70	0.90
M	1.30	1.50
N	2.60	2.80
O	2.60	3.10
P	2.45	2.65
K/R	1.10	1.30

IMPORTANT NOTICE