Super Junction Power MOSFET
SJ65R950F

Features

HF

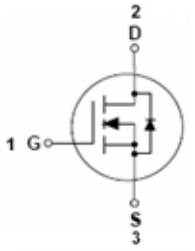
- Very low FOM $R_{DS(on)} \times Q_G$
- Very high commutation ruggedness

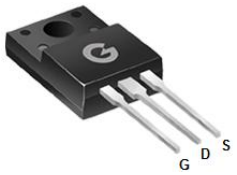
APPLICATIONS

- 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
SJ65R950F	ITO-220AB	50 pcs / Tube	SJ65R950F

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	650	V
Gate-Source Voltage	V_{GSS}	±30	V
Continuous Drain Current (T_C = 25°C) *1	I_D	4.5	A
Continuous Drain Current (T_C = 125°C) *1	I_D	3	A
Pulsed Drain Current (T_C = 25°C)	I_{DM}	8	A
Single Pulse Avalanche Energy *2	E_{AS}	100	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_C = 25°C)	P_D	28	W
Thermal Resistance Junction-to-Air (T_C = 25°C)	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance Junction-to-Case (T_C = 25°C)	$R_{\theta JC}$	4.5	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650V, V_{GS} = 0V, T_J = 25°C	-	-	1	μA
		V_{DS} = 650V, V_{GS} = 0V, T_J = 150°C	-	-	10	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS} = 10V, I_D = 1.5A, T_J = 25°C	-	-	0.95	Ω
		V_{GS} = 10V, I_D = 1.5A,T_J = 150°C	-	-	2.35	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	-	4	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 100V f = 250kHz	-	263	-	pF
C_{OSS}	Output Capacitance		-	13.7	-	
C_{RSS}	Reverse Transfer Capacitance		-	1.06	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DS} = 400V V_{GS} = 10V I_D = 2.2A	-	12.8	-	ns
t_r	Turn-on Rise Time		-	26.4	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	22.2	-	
t_f	Turn-Off Fall Time		-	75.6	-	
Q_G	Total Gate-Charge	V_{DS} = 480V V_{GS} = 10V I_D = 2A	-	7.72	-	nC
Q_{GS}	Gate to Source Charge		-	1.07	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	3.63	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_S = 2A, V_{GS} = 0V	-	0.818	-	V
I_S	Diode Continuous Forward Current	T_C = 25°C	-	-	4.5	A
I_{SM}	Pulsed Source-Drain Current		-	-	8	A
t_{rr}	Reverse Recovery Time	I_S = 2.2A, V_R = 400 V di_F/dt = 100 A/μs	-	170	-	ns
Q_{rr}	Reverse Recovery Charge		-	0.92	-	μC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_D = 4.5A, V_{DD} = 50V, R_G = 25Ω, L = 10mH, Starting T_J = 25°C

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

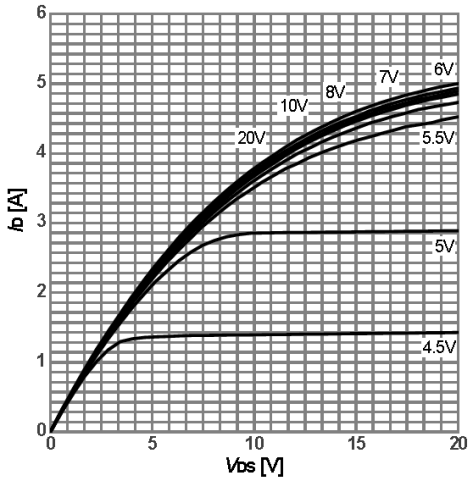


Fig 1 Output Characteristics

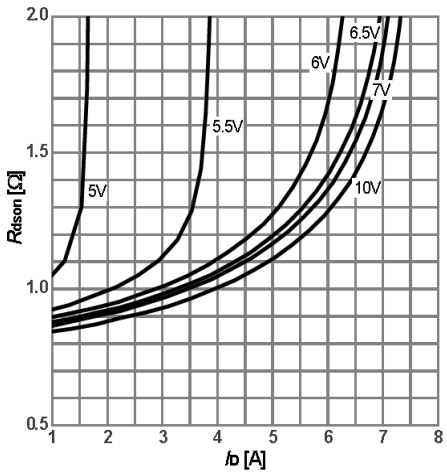


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

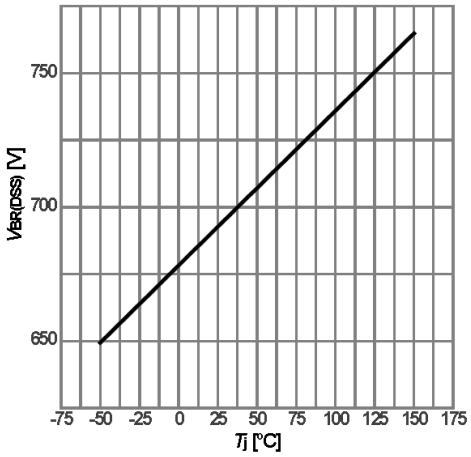


Fig 3 Breakdown Voltage vs. Junction Temperature

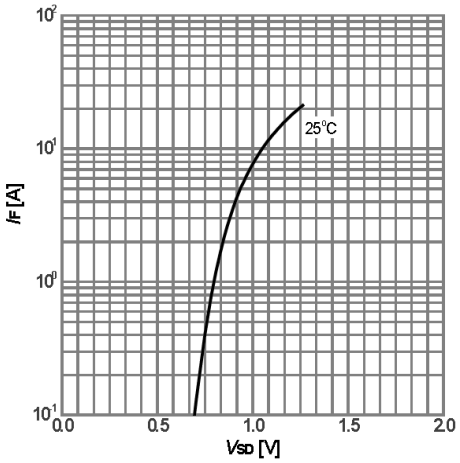


Fig 4 Body-Diode Characteristics

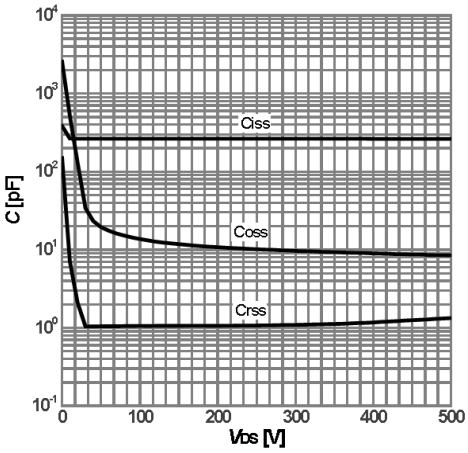


Fig 5 Capacitance Characteristics

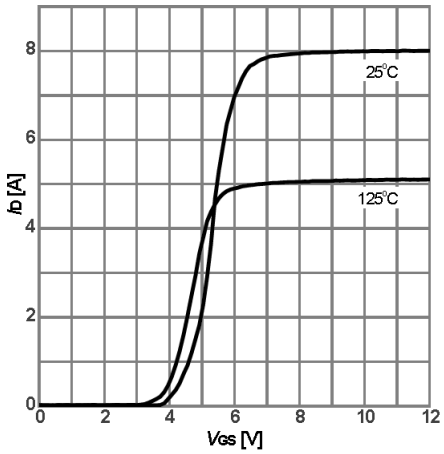


Fig 6 Transfer Characteristics

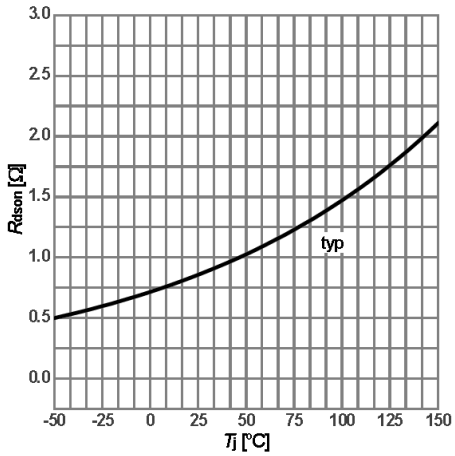


Fig 7 On-Resistance vs. Junction Temperature

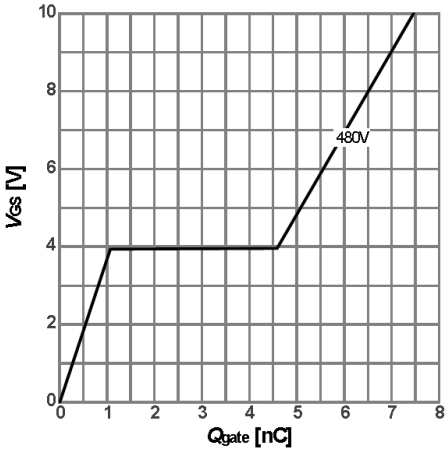


Fig 8 Gate-Charge Characteristics

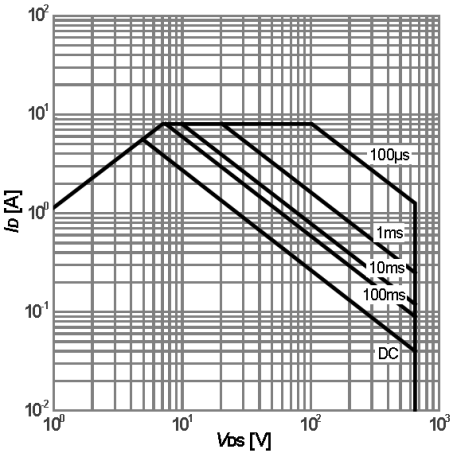


Figure 9 Maximum Safe Operating Area

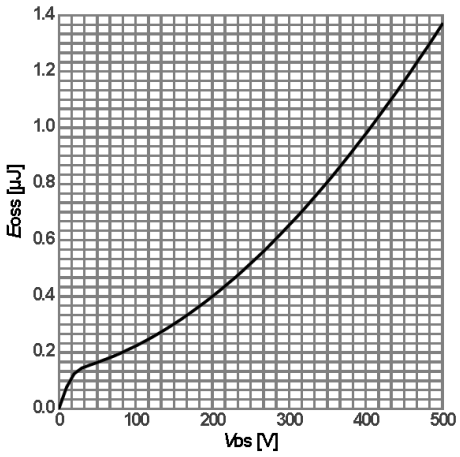


Figure 10 Typical Coss stored energy

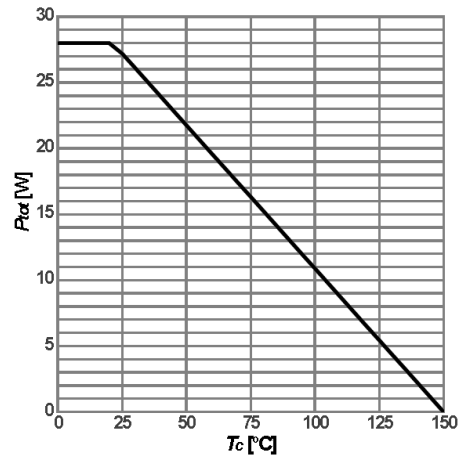


Figure 11 Power Dissipation

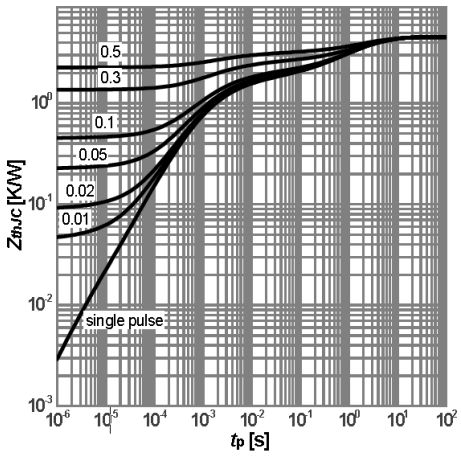
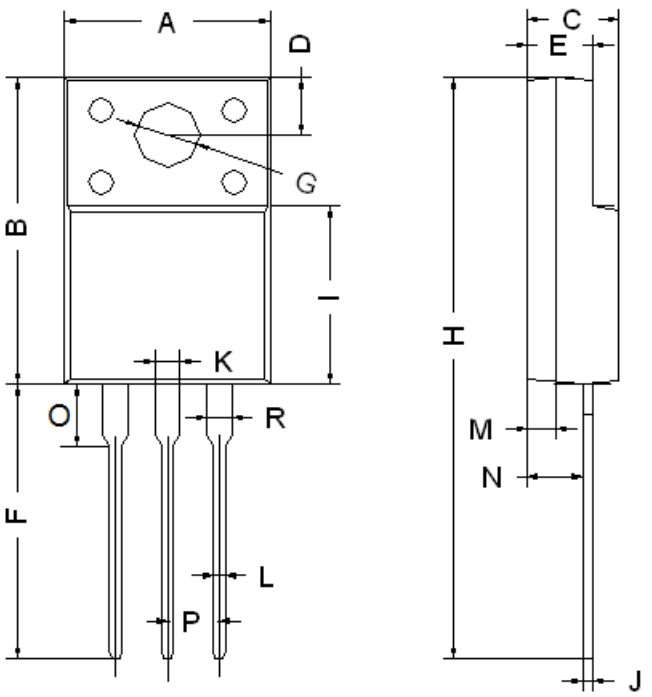


Figure 12 Max. transient thermal impedance

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