

Features

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

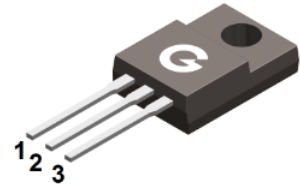
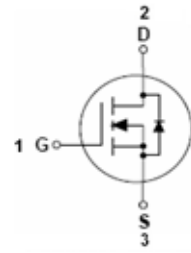
HF

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
SJ65R190F	ITO-220AB	50 pcs / Tube	SJ65R190F

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$) ^{*1}	I_D	7.7	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$) ^{*1}		4.9	A
Pulsed Drain Current ($T_C = 25^\circ\text{C}$)	I_{DM}	60	A
Single Pulse Avalanche Energy ^{*2}	E_{AS}	500	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	34	W
Thermal Resistance Junction-to-Air ($T_A = 25^\circ\text{C}$)	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case ($T_C = 25^\circ\text{C}$)	$R_{\theta JC}$	3.68	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	$V_{GS} = 10V, I_D = 7.3A$	-	-	0.19	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
R_G	Gate resistance	$V_{GS} = 0V, f = 1MHz$	-	18	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	1610	-	pF
C_{OSS}	Output Capacitance	$V_{DS} = 50V$	-	70	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 250KHz$	-	0.74	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 400V$ $V_{GS} = 10V$ $I_D = 10A$	-	25.6	-	ns
t_r	Turn-on Rise Time		-	34.6	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	120	-	
t_f	Turn-Off Fall Time		-	29.8	-	
Q_G	Total Gate-Charge	$V_{DS} = 480V$	-	44	-	nC
Q_{GS}	Gate to Source Charge	$V_{GS} = 10V$	-	5.7	-	
Q_{GD}	Gate to Drain (Miller) Charge	$I_D = 10A$	-	17	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	$I_F = 10A, V_{GS} = 0V$	-	0.84	1.20	V
I_S	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$	-	-	20	A
I_{SM}	Pulsed Source-Drain Current ^{*2}		-	-	45	A
t_{rr}	Reverse Recovery Time	$I_F = 8A, V_R = 400V$	-	290	-	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt = 100A/\mu s$	-	4	-	μC

Notes:

- Pulse width t_p limited by $T_{J(Max)}$
- $V_{DD} = 50V, I_D = 4.5A, R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

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

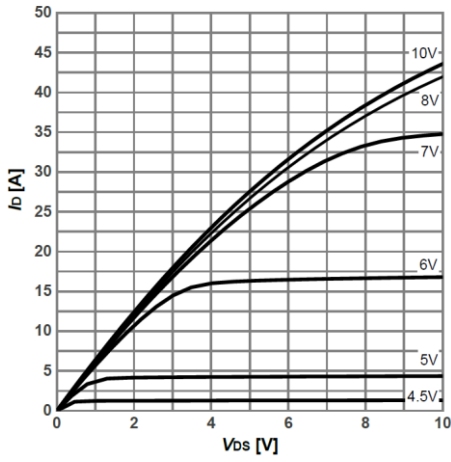


Fig 1 Typical Output Characteristics

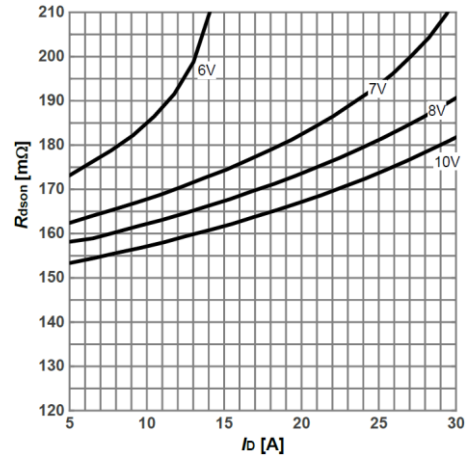


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

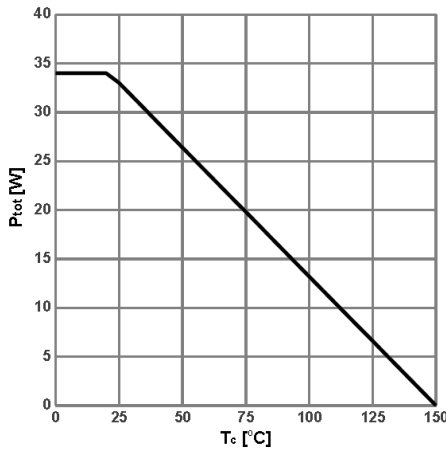


Fig 3 Power Dissipation vs. Case Temperature

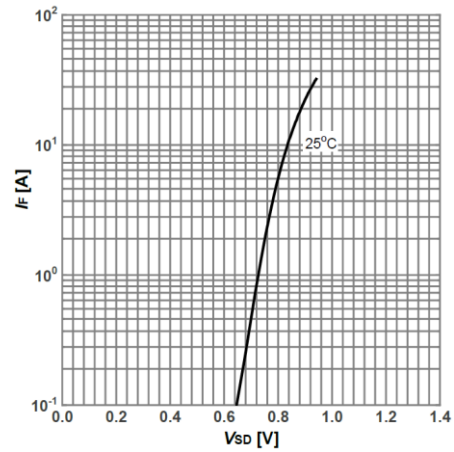


Fig 4 Body-Diode Characteristics

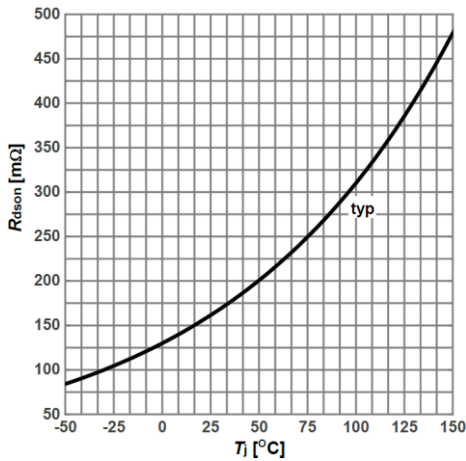


Fig 5 On-Resistance vs. Junction Temperature

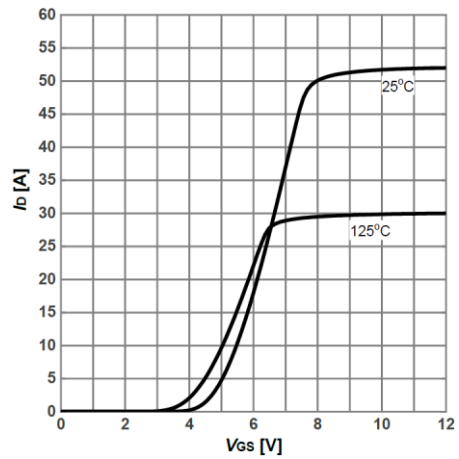


Fig 6 Transfer Characteristics

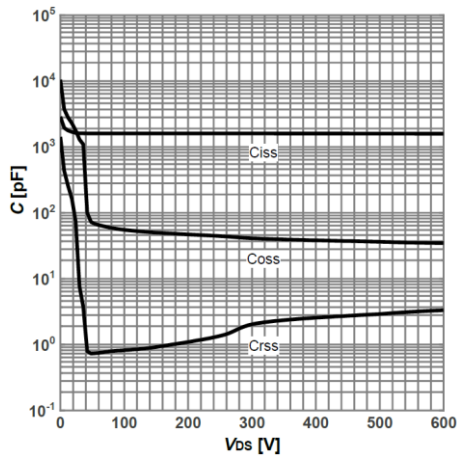


Fig 7 Capacitance Characteristics

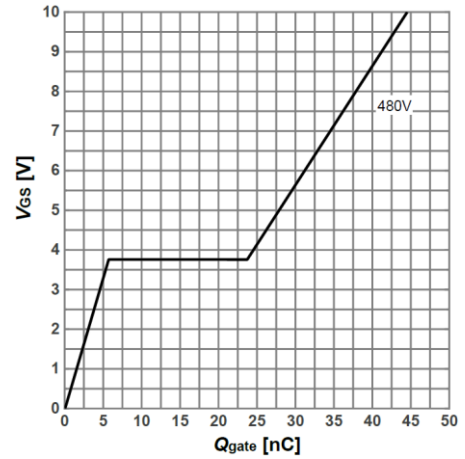


Fig 8 Gate-Charge Characteristics

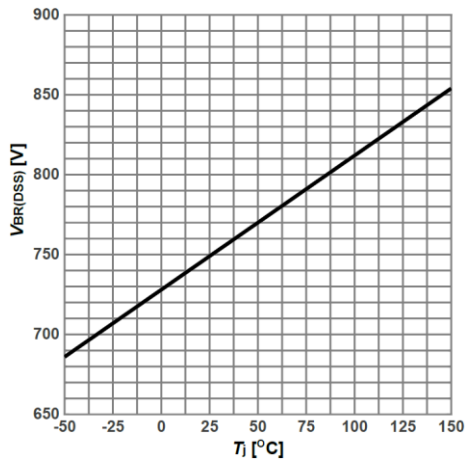


Fig 9 Breakdown Voltage vs. Junction Temperature

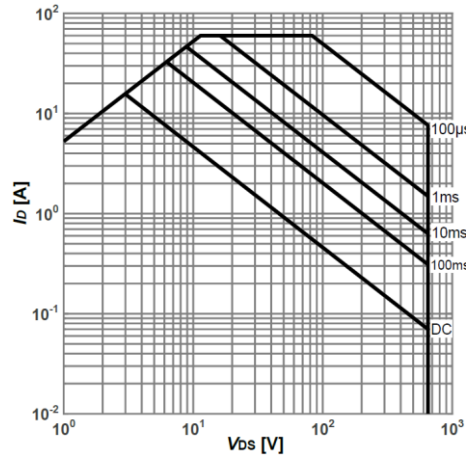
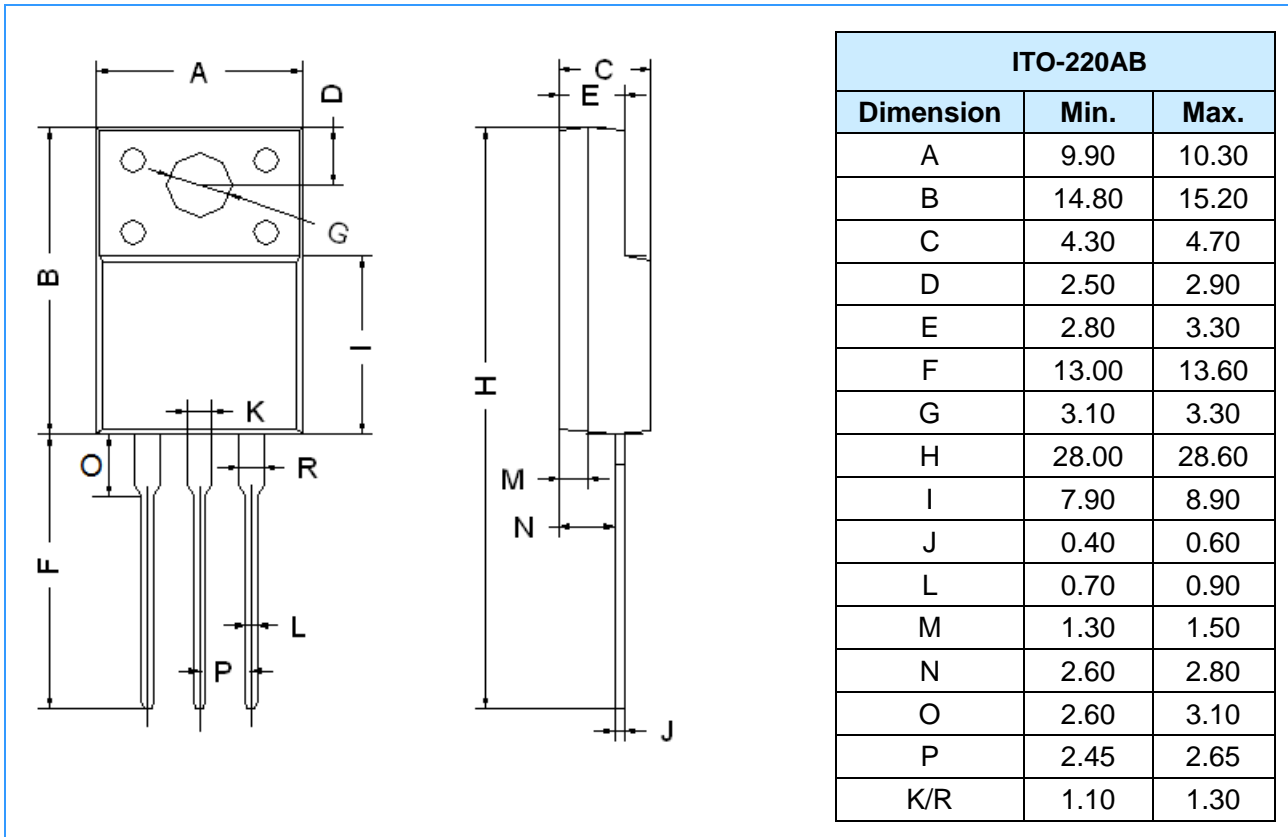


Fig 10 Safe Operation Area

Package Outline Dimensions (Unit: mm)



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