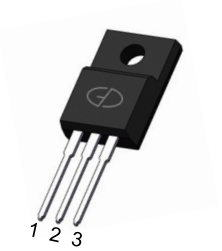
170mΩ,650V (D-S) Super Junction Power MOSFET

Features

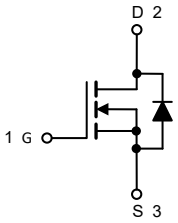
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Intrinsic Fast-Recovery Body Diode
- RoHS Compliant



ITO-220AB

Applications

- Adapter
- LED Lighting
- PWM Motor Controls



Absolute Maximum Ratings (T_J=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	650	V
Gate Source Voltage		V_{GS}	±30	V
Drain Current, Continuous V_{GS}=10V	T_C=25°C	I_D	22	A
	T_C=100°C		14	
Drain Current, Pulsed *(Note 1)*		I_{DM}	66	A
Single Avalanche Energy *(Note 2)*		E_{AS}	405	mJ
Power Dissipation	T_C=25°C	P_D	28.4	W
	T_C=100°C		11.4	
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Single pulse; t_p ≤1us.
Note 2: V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω, starting T_J = 25 °C.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	4.4	°C/W
Thermal Resistance Junction to Ambient *(Note 3)*	R_{thJA}	65	°C/W

Note 3: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.

Electrical Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	650	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V	--	--	1	uA
		V_{DS}=520V, V_{GS}=0V, T_J=125°C	--	100	--	
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	2.5	3.5	4.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance *(Note 4)*	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	--	148	170	mΩ
		V_{GS}=10V, I_D=10A, T_J=125°C	--	300	--	
Total Gate Charge	Q_g	$V_{GS(off)}$=0V, $V_{GS(on)}$=10V, V_{DD}=520V, I_D=22A	--	34	--	nC
Gate-Source Charge	Q_{gs}		--	10	--	
Gate-Drain Charge	Q_{gd}		--	14	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=325V, I_D=22A, R_G=10Ω	--	25	--	ns
Turn-on Rise Time	t_r		--	52	--	
Turn-off Delay Time	$t_{d(off)}$		--	43	--	
Turn-off Fall Time	t_f		--	42	--	
Gate Resistance	R_g	V_{GS}=0V, f=1MHz, open drain	--	5	--	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=200V, f=1MHz	--	1571	--	pF
Output Capacitance	C_{oss}		--	51	--	
Reverse Transfer Capacitance	C_{rss}		--	3	--	

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Current, Continuous	I_{SD}	T_C=25°C	--	--	22	A
Diode Forward Voltage *(Note 4)*	V_{SD}	I_F=22A, V_{GS}=0V	--	--	1.4	V
Reverse Recovery Time	T_{rr}	I_F=22A, di/dt = 100 A/μs	--	163	--	ns
Reverse Recovery Charge	Q_{rr}		--	980	--	nC

Note 4: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

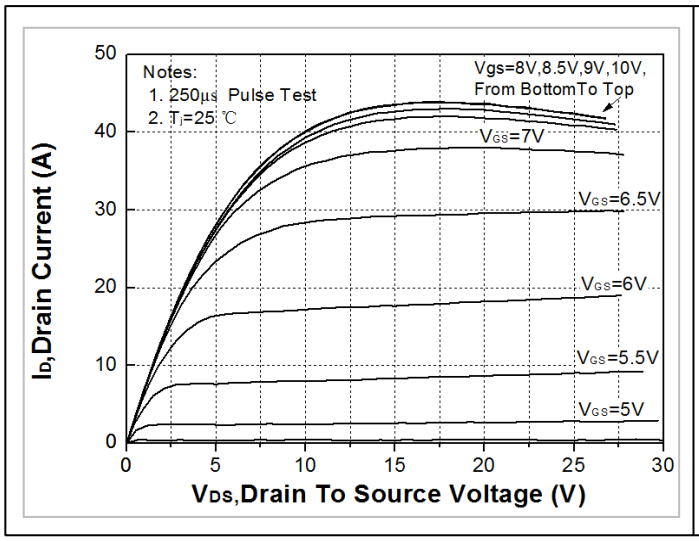


Fig1. Output characteristics

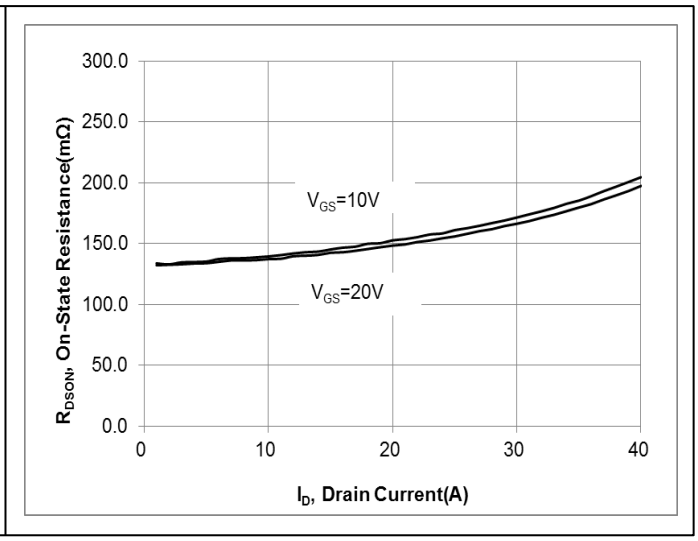


Fig2. Drain-source on-state resistance

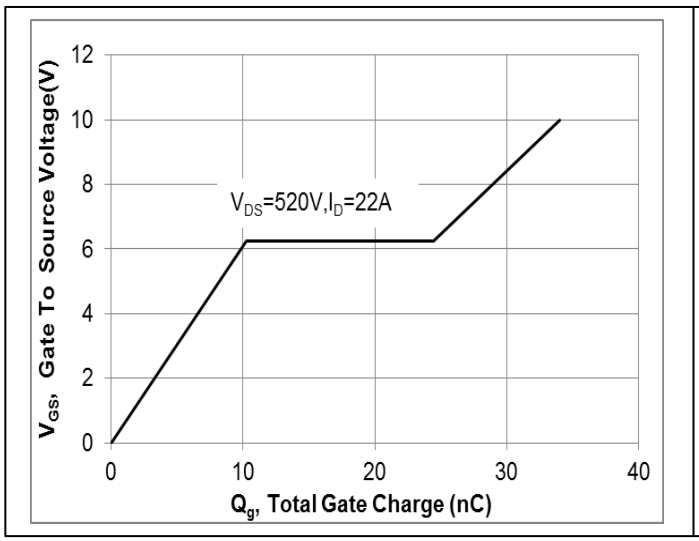


Fig3. Gate charge characteristics

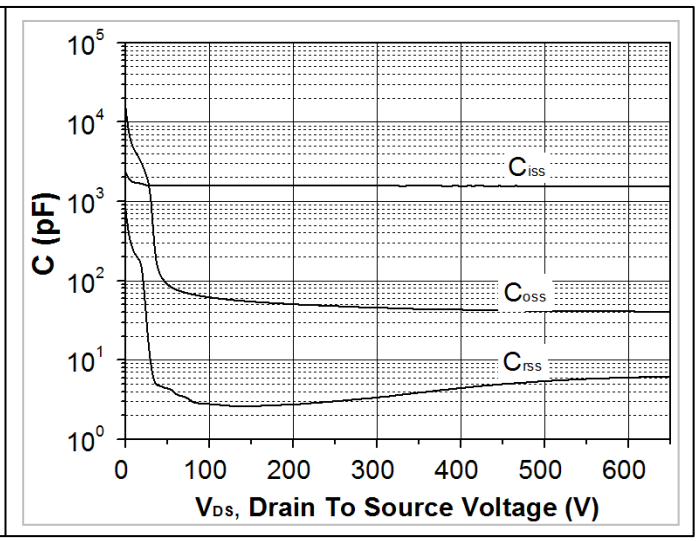


Fig 4. Capacitance Characteristics

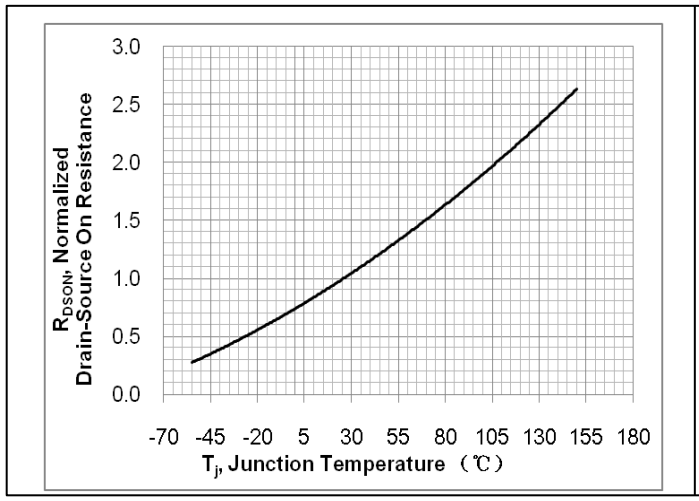


Fig 5. $R_{DS(ON)}$ vs junction temperature

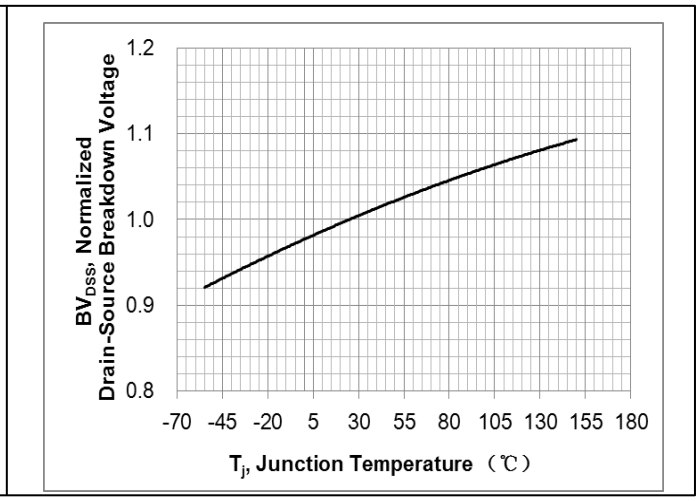


Fig 6. BV_{DSS} vs junction temperature

Typical Characteristics Curves (TJ = 25℃ unless otherwise noted)

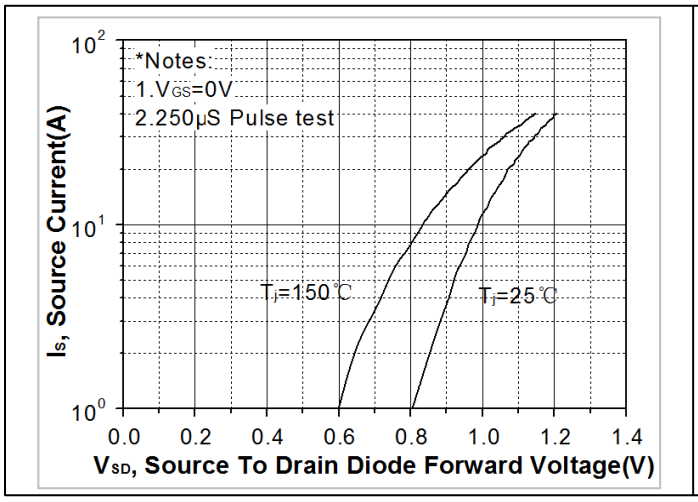


Fig 7 . Forward characteristics of reverse diode

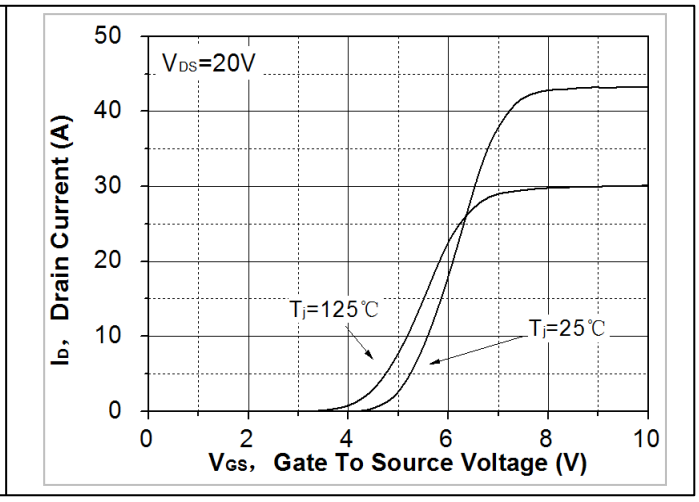


Fig 8 . Transfer characteristics

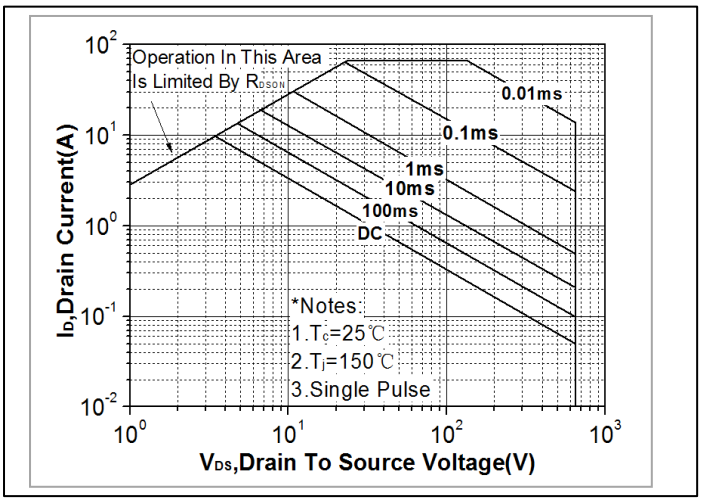


Fig 9. Safe operating area(TO-220F)

Typical Characteristics Curves (TJ = 25°C unless otherwise noted)

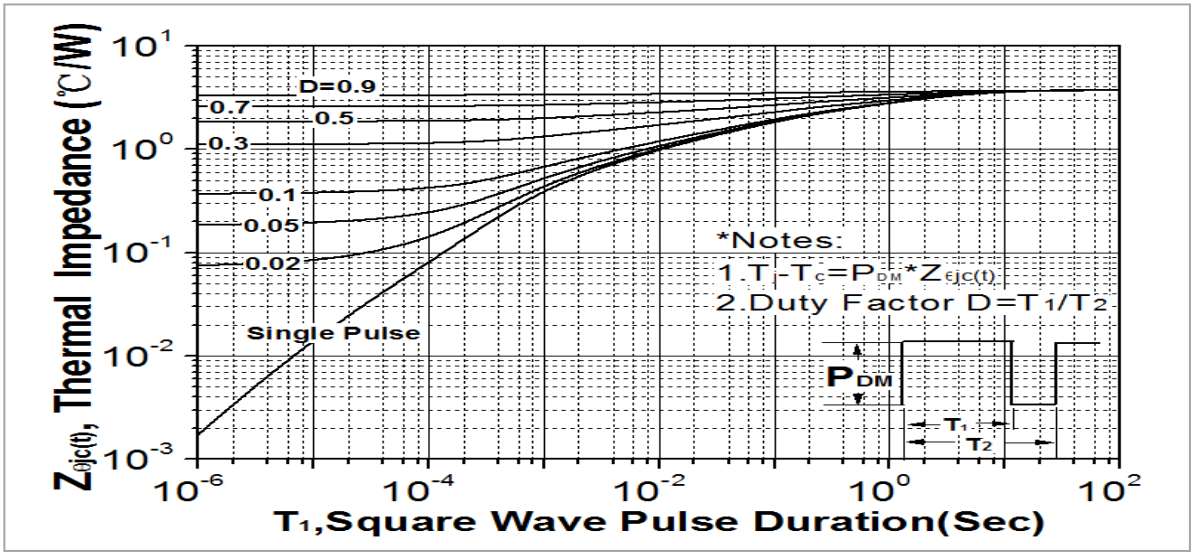
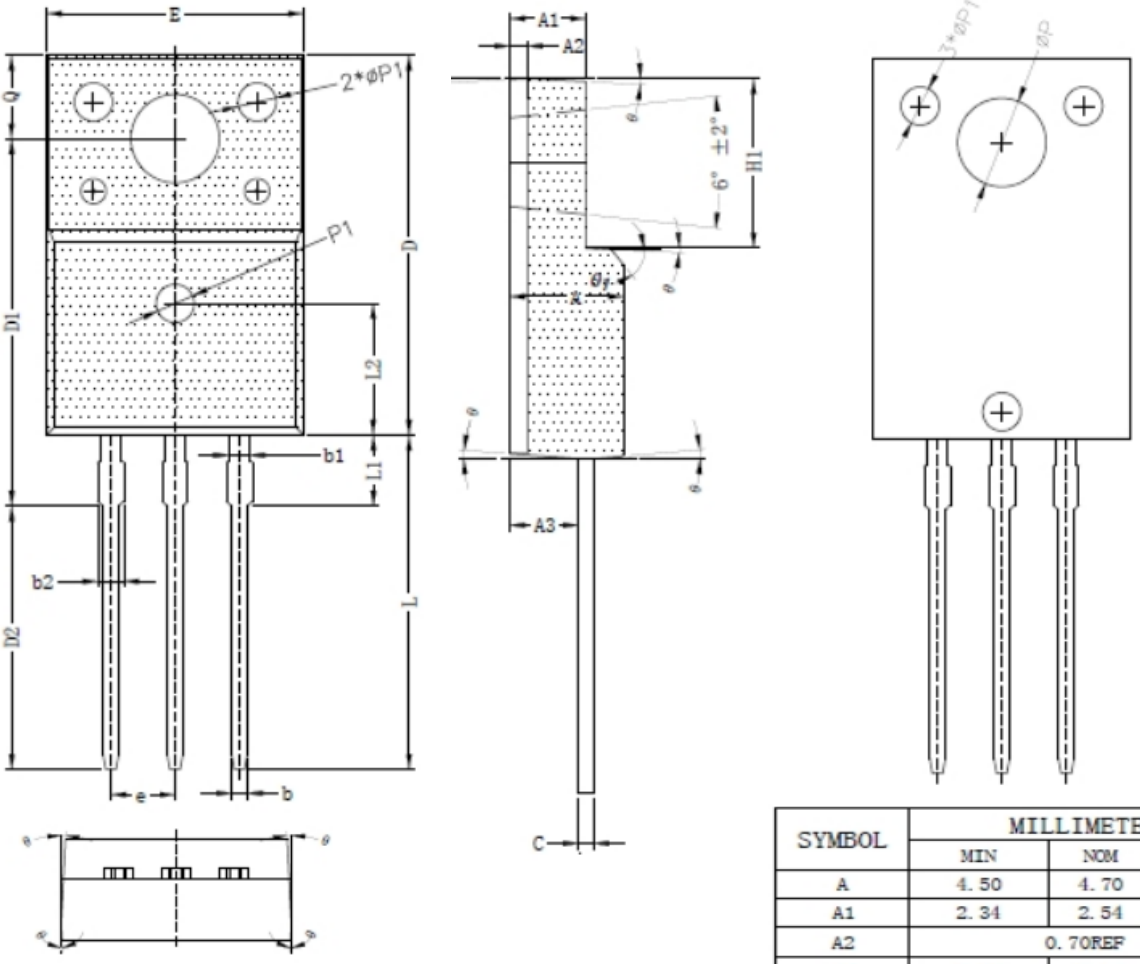


Fig 10. Transient thermal impedance (TO-220F)

Package Outline Dimensions (Unit: millimeters)

ITO-220AB



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.50	4.70	4.83
A1	2.34	2.54	2.74
A2		0.70REF	
A3	2.56	2.76	2.93
b	0.70	—	0.90
b1	1.18	—	1.38
b2	—	—	1.47
c	0.45	0.50	0.60
D	15.67	15.87	16.07
D1	15.55	15.75	15.95
D2	9.60	9.80	10.00
E	9.96	10.16	10.36
e		2.54BSC	
H1	6.48	6.68	6.88
L	12.68	12.98	13.28
L1	3.10	3.20	3.30
L2		6.50REF	
ØP	3.08	3.18	3.28
ØP1	1.40	1.50	1.60
Q	3.20	—	3.40
θ	1°	5°	7°
θ1	42°	45°	48°

Revision History

Version	Date	Major Changes
Preliminary	2025.12.08	Preliminary

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