MOSPEC

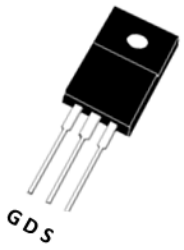
50N100F

100V N-Channel Power MOSFET

BV_{DSS}	100V
I_D	50A
$R_{DS(ON)\ typ.}$	13.5mΩ

DESCRIPTION：
- Fast Recovery Body Diode
- Low Gate Charge Minimize Switching Loss
- Proprietary New Trench Technology
- $R_{DS(ON),typ.}$=13.5mΩ@V_{GS}=10V
- RoHS compliant

TYPICAL APPLICATIONS：
- Synchronous Rectification
- UPS Inverter



ITO-220AB

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	50 36	A
Pulsed Drain Current (1)	V_{GS}=10V	I_{DM}	150	A
Single Pulsed Avalanche Energy	L=1.0mH	E_{AS}	100	mJ
Power dissipation		P_D	83	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Repetitive rating; pulse width limited by maximum junction temperature.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction – Ambient Junction - Case	$R_{\theta(j\text{-}A)}$ $R_{\theta(j\text{-}C)}$	62 1.5	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	BV_{DSS}	100			V
Zero Gate Voltage Drain Current VDS = 100 V, VGS = 0 V Tj=25℃	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2.0		4.0	V
Drain-Source On-State Resistance VGS = 10V, ID = 20A	$R_{DS(on)}$		13.5	16	mΩ
Input capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{iss}		1243		pF
Output capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{oss}		224		pF
Reverse transfer capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{rss}		6.3		pF
Total Gate Charge VDD= 50V, ID= 20A,VGS= 10V	Q_G		20		nC
Gate to Source Charge VDD= 50V, ID= 20A,VGS= 10V	Q_{GS}		5.5		nC
Gate to Drain Charge VDD= 50V, ID= 20A,VGS= 10V	Q_{GD}		5.8		nC
Turn-on delay time VDD=50 V, VGS= 10V, ID= 20A, R_{GEN}=2.0Ω	td $_{(ON)}$		15.5		ns
Turn-on Rise time VDD=50 V, VGS= 10V, ID= 20A, R_{GEN}=2.0Ω	tr		4.5		ns
Turn-off delay time VDD=50 V, VGS= 10V, ID= 20A, R_{GEN}=2.0Ω	td $_{(OFF)}$		30.5		ns
Turn-off Fall time VDD=50 V, VGS= 10V, ID= 20A, R_{GEN}=2.0Ω	tf		5.5		ns

Body Diode

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage VGS = 0V, I_S = 40A	V_{SD}			1.2	V
Continuous Source Current	I_{SD}			50	A
Revers Recovery Time IF=20A, dIF/dt = 100A/us□	Trr		49		ns
Revers Recovery Charge IF=20A, dIF/dt = 100A/us	Qrr		58.5		nC

Typical Characteristics

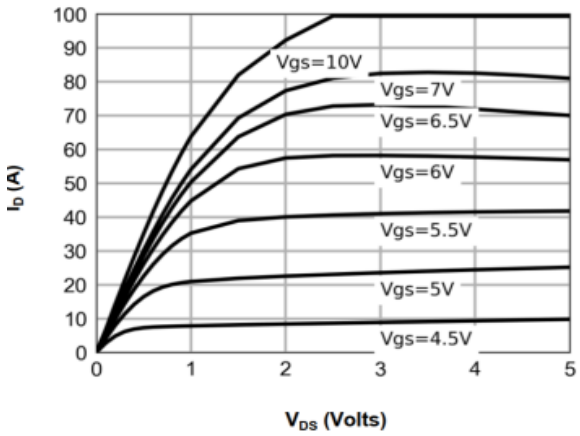


Figure 1. On-Region Characteristics

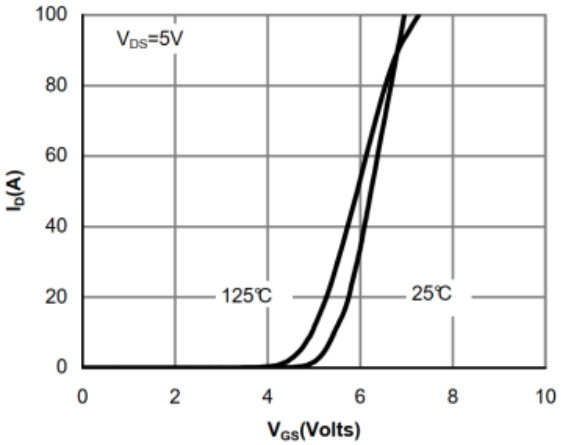


Figure 2. Transfer Characteristics

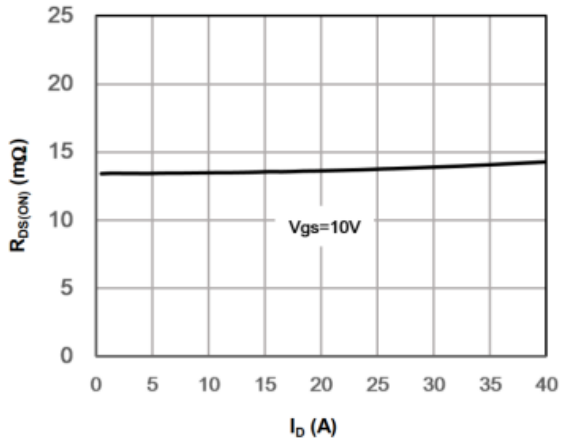


Figure 3. On-resistance vs. Drain Current and Gate Voltage

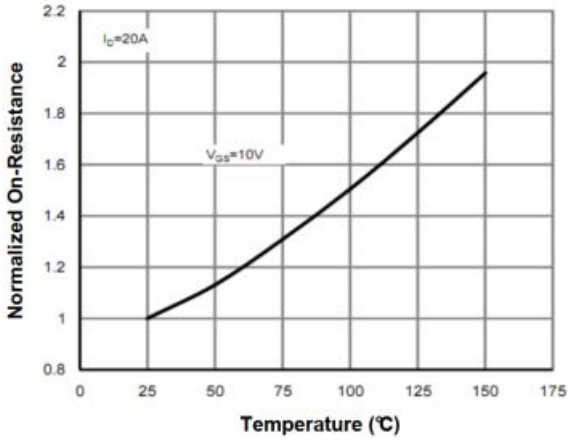


Figure 4. On-resistance vs. Junction Temperature

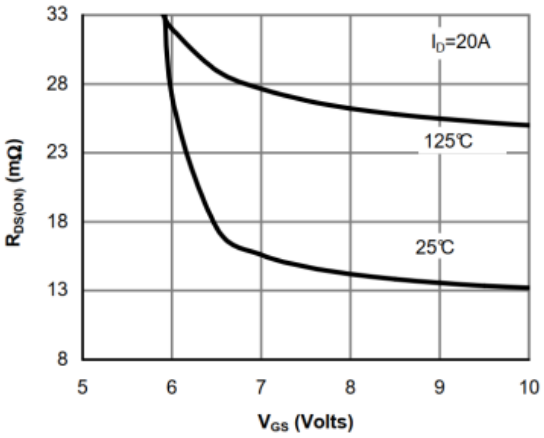


Figure 5. On-resistance vs. Gate-Source Voltage

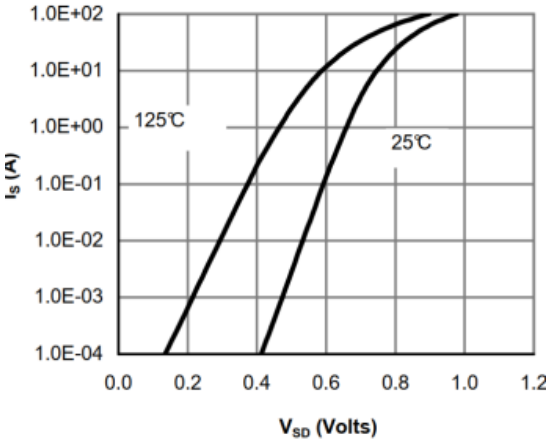


Figure 6. Body-Diode Characteristics

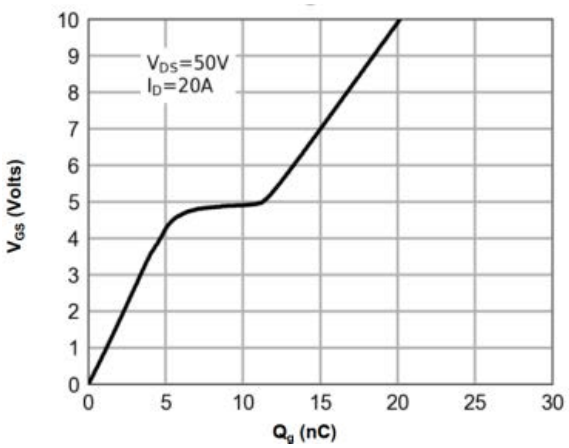


Figure 7. Gate Charge Characteristics

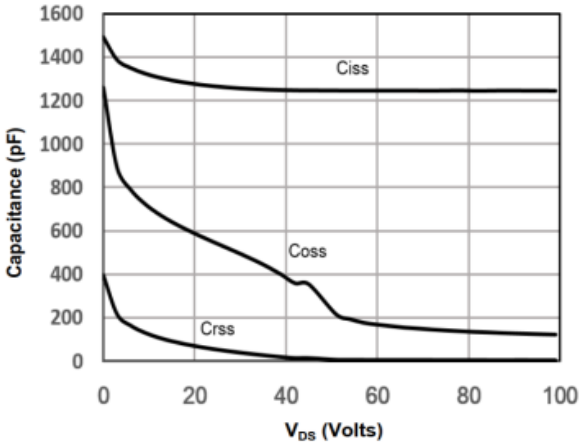


Figure 8. Capacitance Characteristics

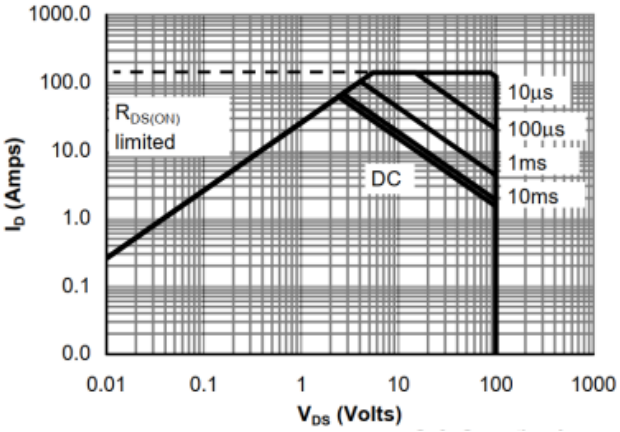
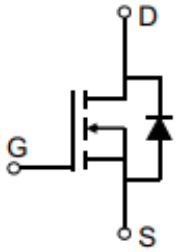
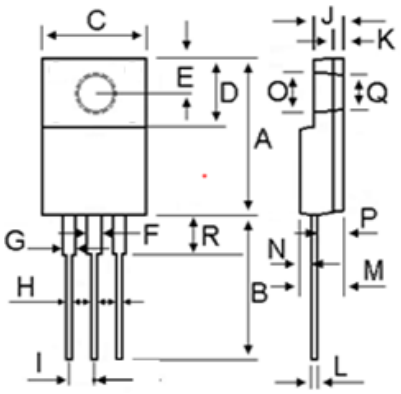


Figure 9. Safe Operating Area

• Circuit diagram



• ITO-220AB Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	14.80	16.10
B	12.65	14.40
C	9.70	10.36
D	4.60	6.80
E	2.50	3.50
F	0.90	1.55
G	0.90	1.55
H	0.50	0.90
I	2.40	2.70
J	2.34	3.30
K	0.55	1.30
L	0.36	0.80
M	4.20	4.90
N	1.10	1.80
O	2.90	3.50
P	2.30	3.15
Q	2.90	3.50
R	2.80	4.85

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