100V N-Channel Power MOSFET

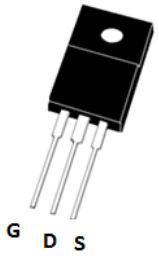
V_{DSS}	100V
I_D (@V_{GS}=10V)	68A
$R_{DS(ON)\_Typ.}$@V_{GS}=10V	6.4mΩ

DESCRIPTION：

- Excellent $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100%△Vds Tested
- Pb-Free Lead Plating
- RoHS compliant

TYPICAL APPLICATIONS：

- Load Switch
- PWM Application
- Power Management



ITO-220AB

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

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	68 48	A
Pulsed Drain Current (1)		I_{DM}	Refer to Fig.4	A
Single Pulsed Avalanche Energy (2)		E_{AS}	92	mJ
Power dissipation	Tc=25℃ Tc=100℃	P_D	101 40	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2.EAS condition: Starting TJ=25C, VDD=50V, VG=10V, RG=25ohm, L=0.5mH, IAS=19.18A, VDD=0V during time in avalanche.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction – Ambient Junction - Case	$R_{\theta(j-A)}$ $R_{\theta(j-C)}$	39 1.2	℃/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	$V_{(BR)DSS}$	100			V
Zero Gate Voltage Drain Current VDS = 80 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	$V_{GS(th)}$	1.1	1.6	2.1	V
Drain-Source On-State Resistance VGS = 10V, ID = 20A VGS = 4.5V, ID = 15A	$R_{DS(on)}$		6.4 8.1	8.4 10.5	mΩ
Input capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{iss}		1872		pF
Output capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{oss}		731		pF
Reverse transfer capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{rss}		22		pF
Gate Resistance f=1MHz, VDS=0 V, VGS=0 V	R_g		2		Ω
Total Gate Charge VDS= 50V, ID= 20A,VGS= 0 to 10V	Q_G		33		nC
Gate to Source Charge VDS= 50V, ID= 20A,VGS= 0 to 10V	Q_{GS}		6		nC
Gate to Drain Charge VDS= 50V, ID= 20A,VGS= 0 to 10V	Q_{GD}		7		nC
Turn-on delay time VDD=51 V, VGS= 10V, ID= 20A, R_{GEN}=6.2Ω	$td_{(ON)}$		10		ns
Turn-on Rise time VDD=51 V, VGS= 10V, ID= 20A, R_{GEN}=6.2Ω	tr		20		ns
Turn-off delay time VDD=51 V, VGS= 10V, ID= 20A, R_{GEN}=6.2Ω	$td_{(OFF)}$		40		ns
Turn-off Fall time VDD=51 V, VGS= 10V, ID= 20A, R_{GEN}=6.2Ω	tf		54		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 = 20A	V_{SD}			1.2	V
Maximum Continuous Body Diode Forward Current	I_S			68	A
Revers Recovery Time IF=15A, dIF/dt = 100A/us□	Trr		40		ns
Revers Recovery Charge IF=15A, dIF/dt = 100A/us□	Qrr		34.9		nC

Typical Performance Characteristics

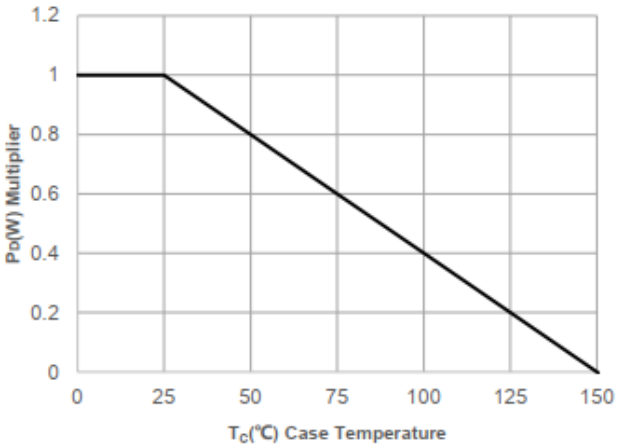


Figure 1. Power De-rating

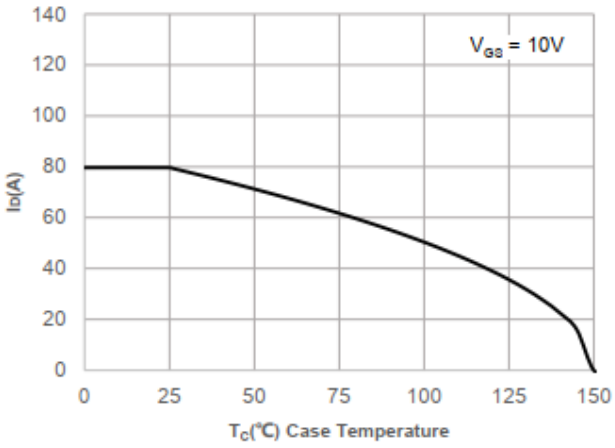


Figure 2. Current De-rating

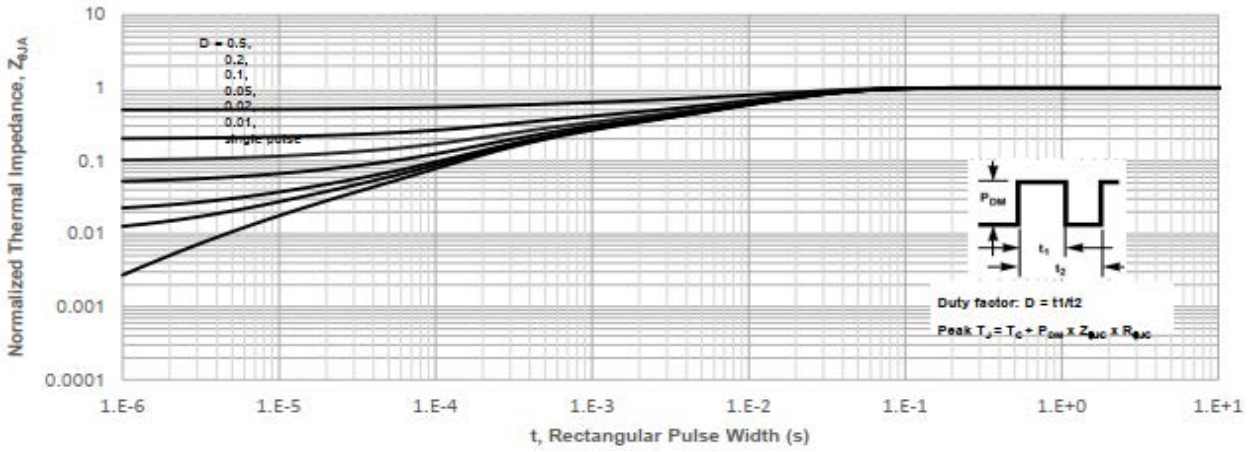


Figure 3. Normalized Maximum Transient Thermal Impedance

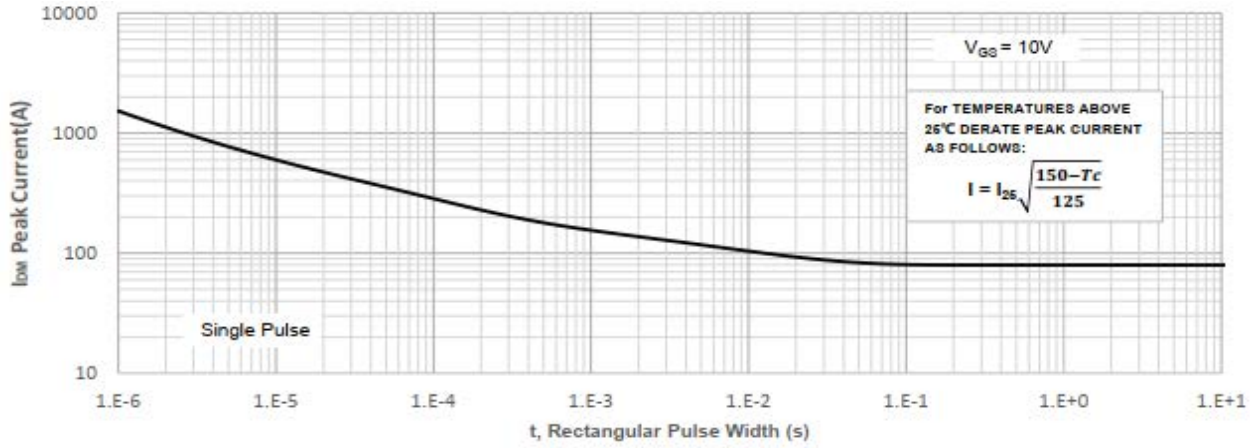


Figure 4. Peak Current Capacity

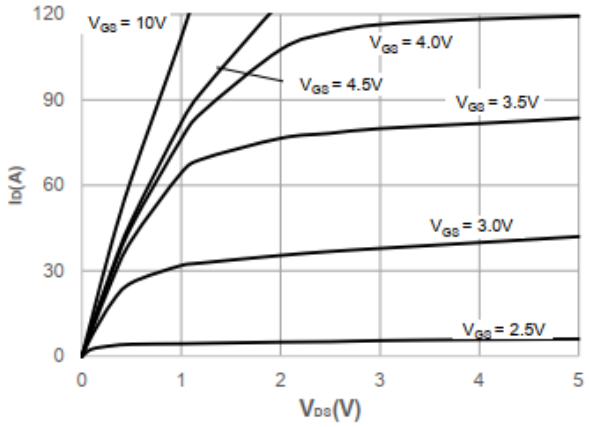


Figure 5. Output Characteristics

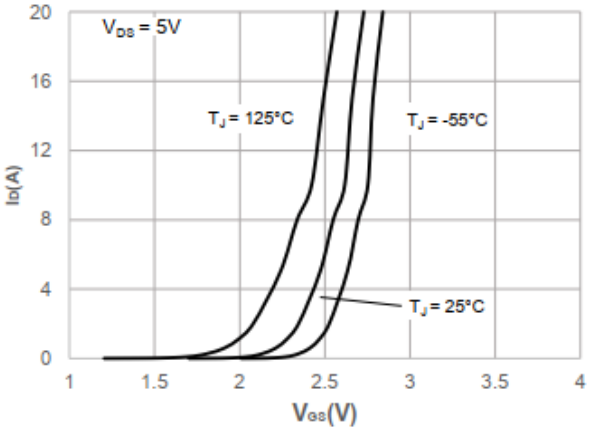


Figure 6. Typical Transfer Characteristics

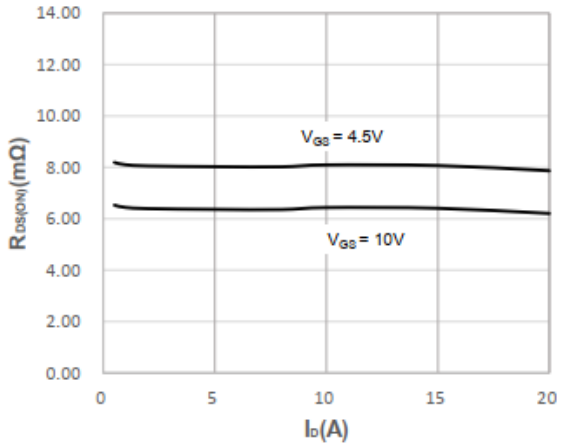


Figure 7. On-resistance vs. Drain Current

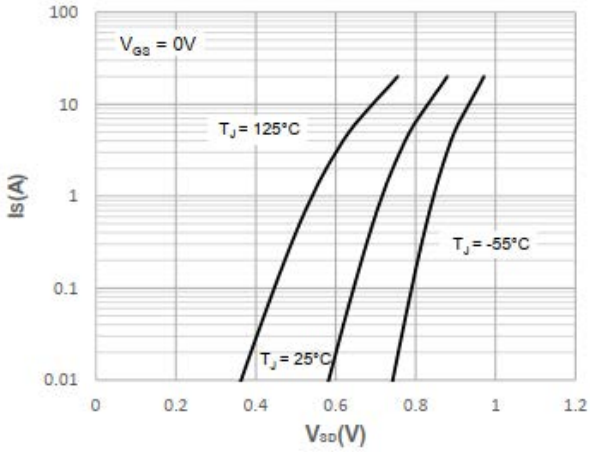


Figure 8. Body Diode Characteristics

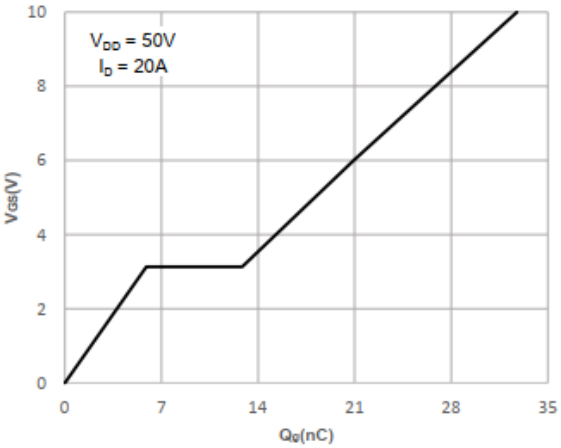


Figure 9. Gate Charge Characteristics

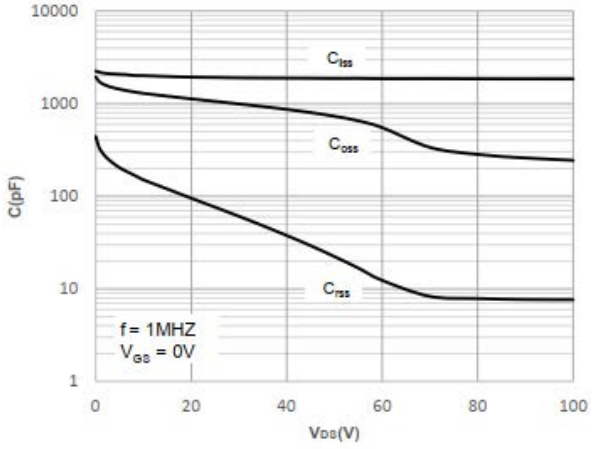


Figure 10. Capacitance Characteristics

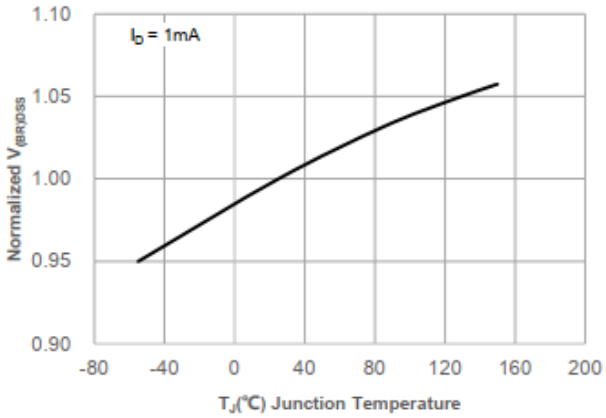


Figure 11. Normalized Breakdown voltage vs. Junction Temperature

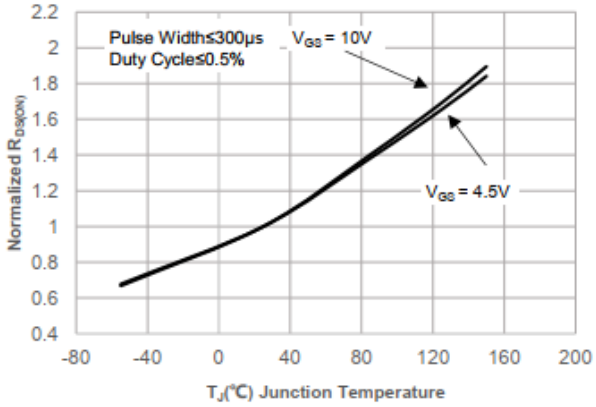


Figure 12. Normalized on Resistance vs. Junction Temperature

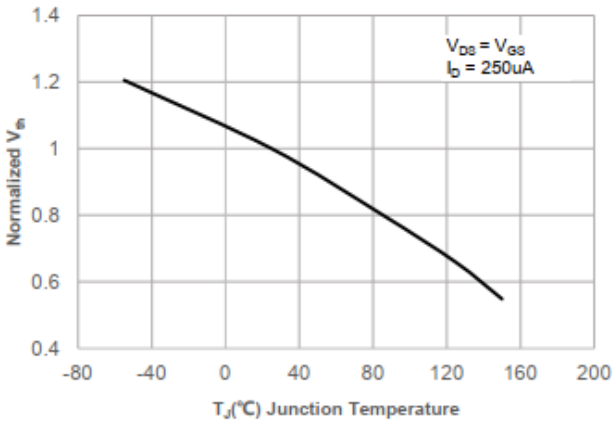


Figure 13. Normalized Threshold Voltage vs. Junction Temperature

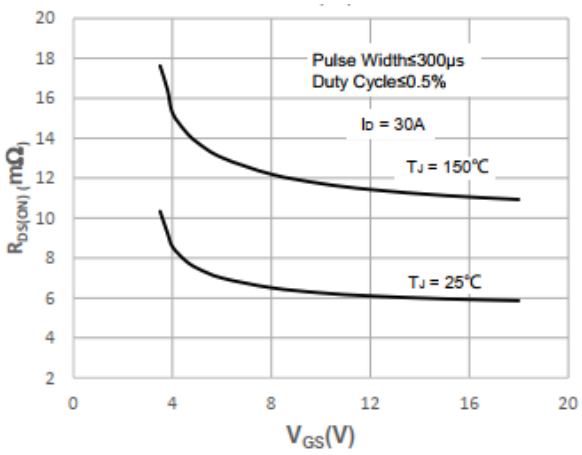


Figure 14. $R_{DS(ON)}$ vs. VGS

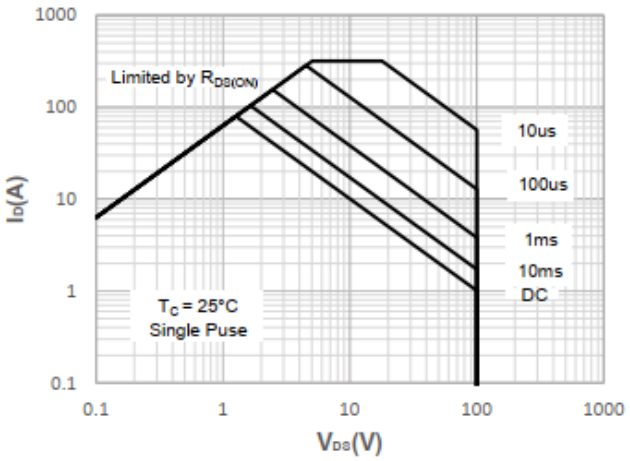
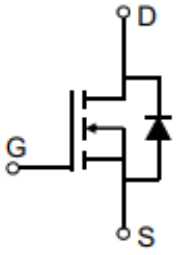
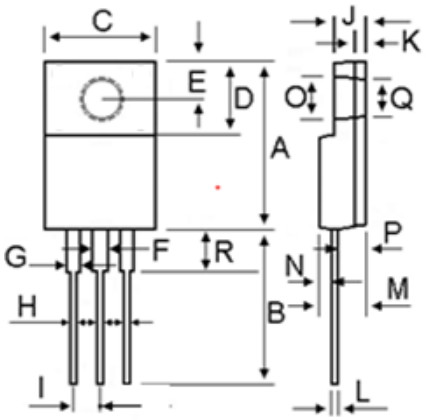


Figure 15. Maximum Safe Operating Area

• 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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