

100V N-Channel Power MOSFET

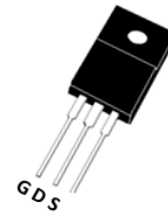
DESCRIPTION :

- Excellent $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% ΔV_{ds} Tested
- RoHS compliant
- Halogen Free

V_{DSS}	100V
I_D	53A
$R_{DS(ON_Typ)} @ V_{GS}=10V$	5.3m Ω

TYPICAL APPLICATIONS :

- Power Management
- Load Switch
- PWM Application



ITO-220AB

MAXIMUM RATINGS (at $T_C = 25^\circ\text{C}$, 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	$T_C=25^\circ\text{C}$ $T_C=100^\circ\text{C}$	I_D	53 33	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	Refer to Fig4	A
Single Pulsed Avalanche Energy ⁽²⁾		E_{AS}	238	mJ
Power dissipation	$T_C=25^\circ\text{C}$ $T_C=100^\circ\text{C}$	P_D	44 17	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

Notes : 1. Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting $T_J=25^\circ\text{C}$, $V_{DD}=50V$, $V_G=10V$, $R_G=25\text{ohm}$, $L=3\text{mH}$, $I_{AS}=12.6A$, $V_{DD}=0V$ during time in avalanche.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	57 2.9	$^\circ\text{C}/W$

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage $V_{GS} = 0V, I_D = 250\mu A$	$V_{(BR)DSS}$	100			V
Zero Gate Voltage Drain Current $V_{DS} = 80V, V_{GS} = 0V$	I_{DSS}			1.0	μA
Gate-Source Leakage Current $V_{GS} = \pm 20V, V_{DS} = 0V$	I_{GSS}			± 100	nA
Gate-Source threshold voltage $V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(th)}$	1.2	1.7	2.2	V
Drain-Source On-State Resistance $V_{GS} = 10V, I_D = 20A$	$R_{DS(on)}$		5.8	7.5	m Ω
Input capacitance $f=1MHz, V_{DS}=50V, V_{GS}=0V$	C_{iss}		2615	3661	pF
Output capacitance $f=1MHz, V_{DS}=50V, V_{GS}=0V$	C_{oss}		806	1128	pF
Reverse transfer capacitance $f=1MHz, V_{DS}=50V, V_{GS}=0V$	C_{rss}		22	44	pF
Gate Resistance $f=1MHz$	R_g		1.8		Ω
Total Gate Charge $V_{DS}= 50V, I_D= 20A, V_{GS}= 0$ to 10V	Q_G		44	59	nC
Gate to Source Charge $V_{DS}= 50V, I_D= 20A, V_{GS}= 0$ to 10V	Q_{GS}		9.1		nC
Gate to Drain Charge $V_{DS}= 50V, I_D= 20A, V_{GS}= 0$ to 10V	Q_{GD}		8.6		nC
Turn-on delay time $V_{DD}=50V, V_{GS}= 10V, I_D= 20A, R_{GEN}=6.2\Omega$	$t_{d(ON)}$		11		ns
Rise time $V_{DD}=50V, V_{GS}= 10V, I_D= 20A, R_{GEN}=6.2\Omega$	t_r		18		ns
Turn-off delay time $V_{DD}=50V, V_{GS}= 10V, I_D= 20A, R_{GEN}=6.2\Omega$	$t_{d(OFF)}$		50		ns
Fall time $V_{DD}=50V, V_{GS}= 10V, I_D= 20A, R_{GEN}=6.2\Omega$	t_f		40		ns

Body Diode

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage $V_{GS} = 0V, I_S = 20A$	V_{SD}			1.2	V
Maximum Continuous Body Diode Forward Current	I_S			53	A
Maximum Pulsed Body Diode Forward Current	I_{SM}			212	A
Revers Recovery Time $I_F = 20A, di/dt = 100A/us$	T_{rr}	35	49	69	ns
Revers Recovery Charge $I_F = 20A, di/dt = 100A/us$	Q_{rr}		67		nC

Typical Performance Characteristics

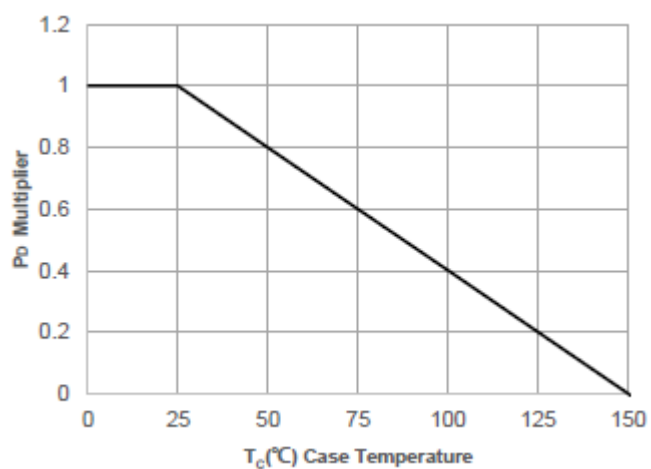


Figure 1. Power De-rating

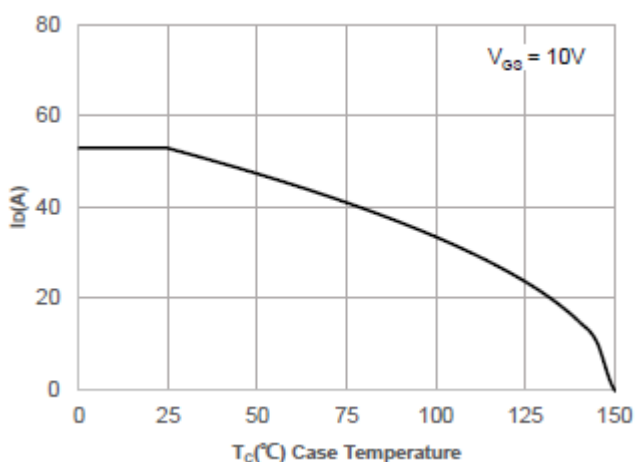


Figure 2. Current De-rating

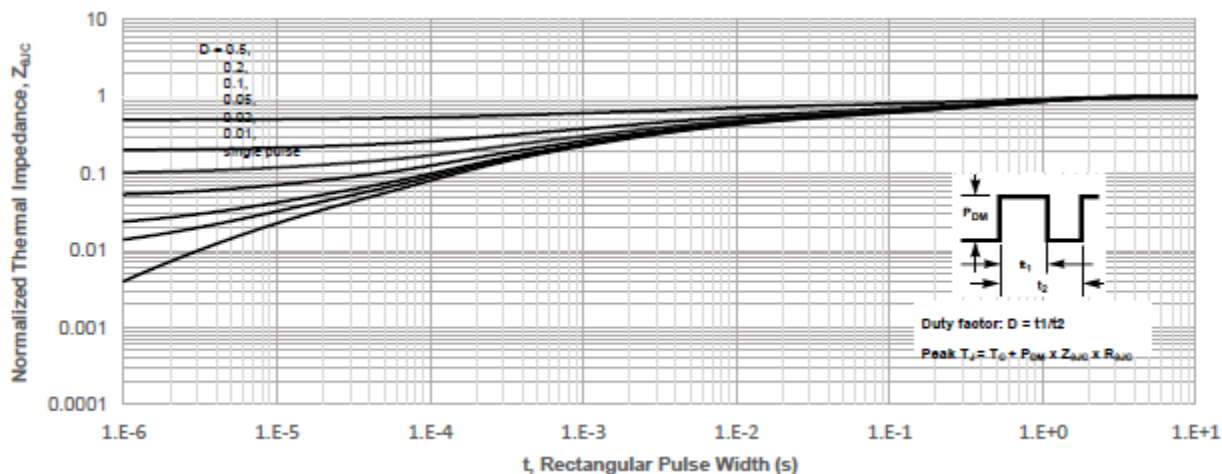


Figure 3. Normalized Maximum Transient Thermal Impedance

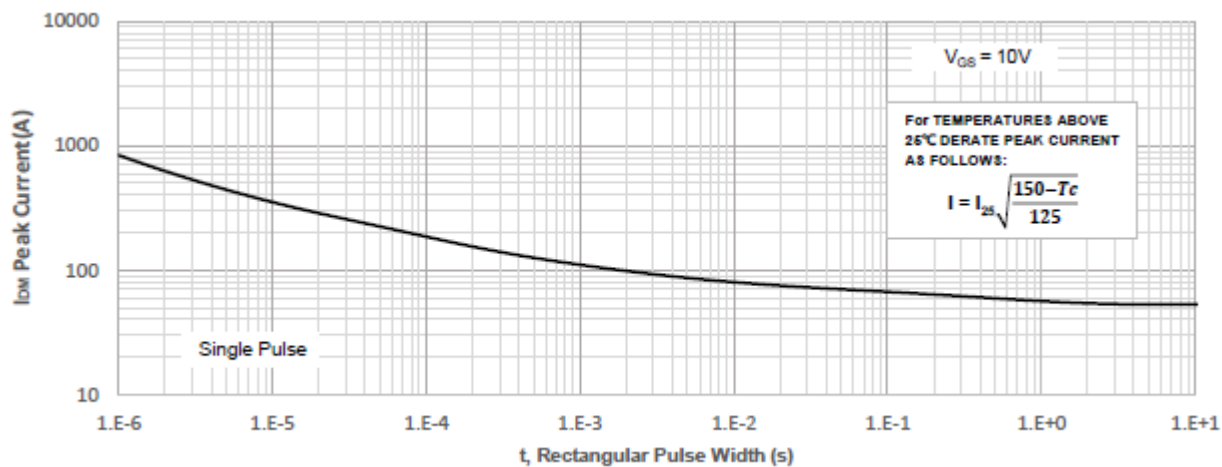


Figure 4. Peak Current Capacity

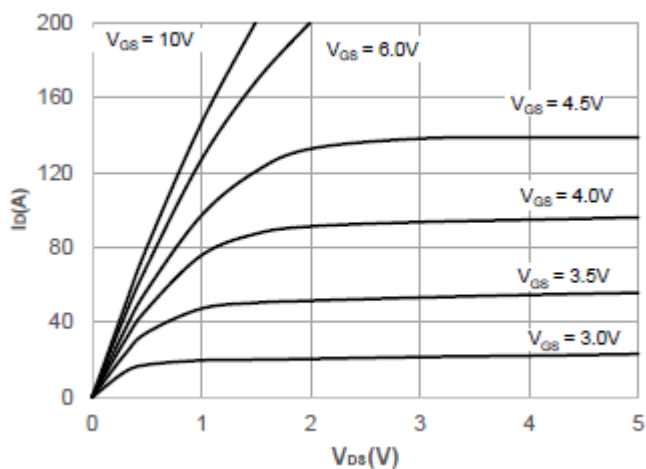


Figure 5. Output Characteristics

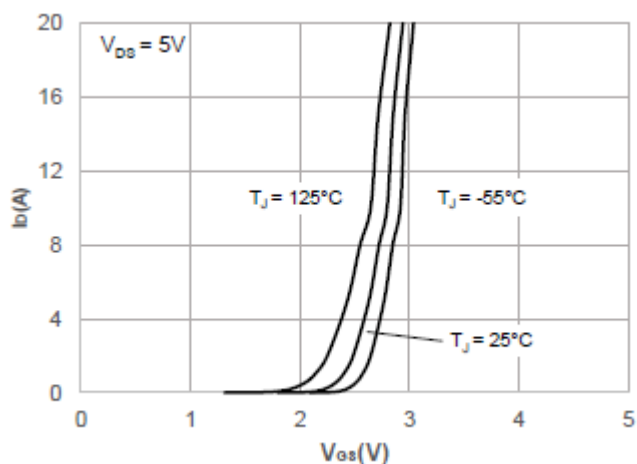


Figure 6. Typical Transfer Characteristics

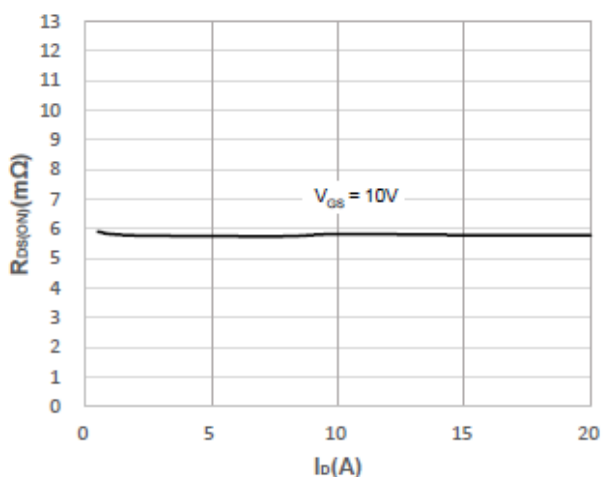


Figure 7. On-resistance vs. Drain Current

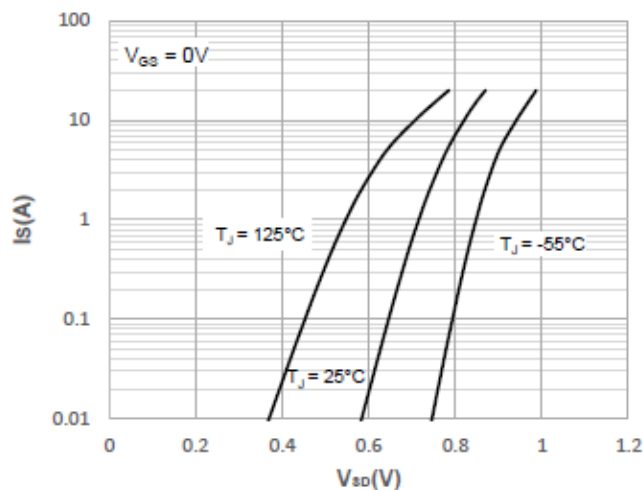


Figure 8. Body Diode Characteristics

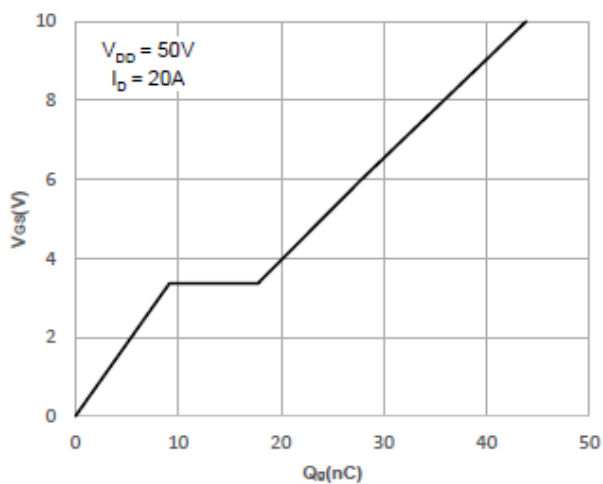


Figure 9. Gate Charge Characteristics

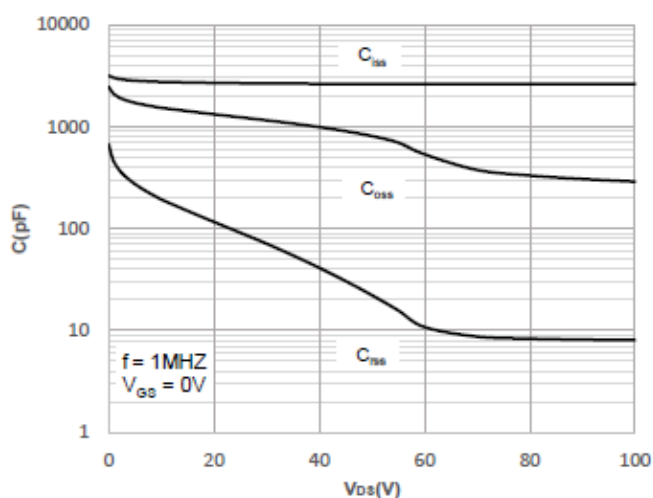


Figure 10. Capacitance Characteristics

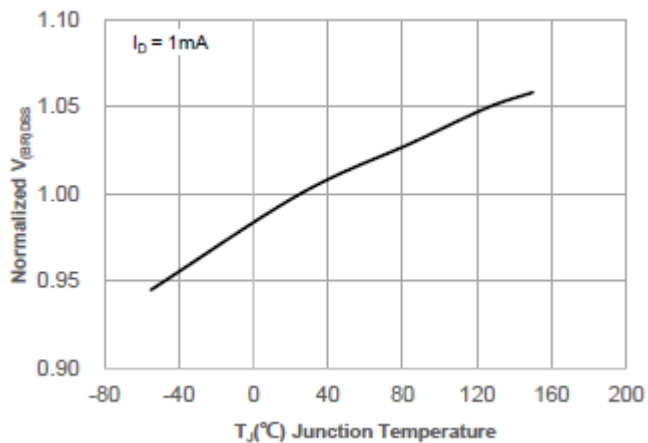


Figure 11. Normalized Breakdown voltage vs. Junction Temperature

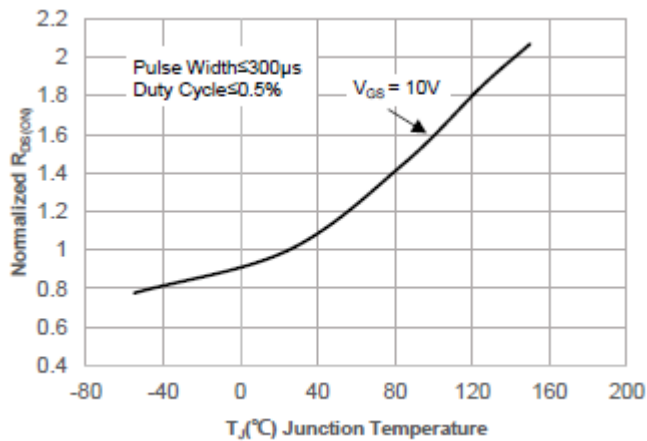


Figure 12. Normalized on Resistance vs. Junction Temperature

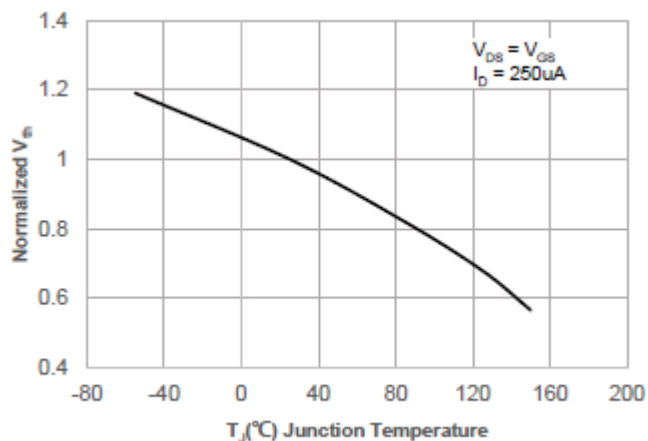


Figure 13. Normalized Threshold Voltage vs. Junction Temperature

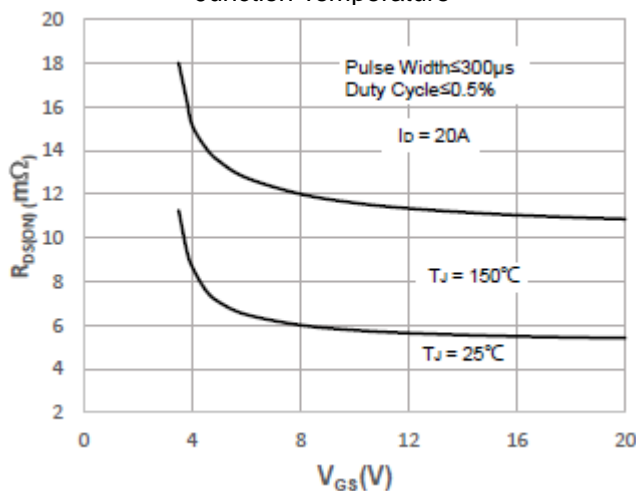


Figure 14. R_DS(ON) vs. V_GS

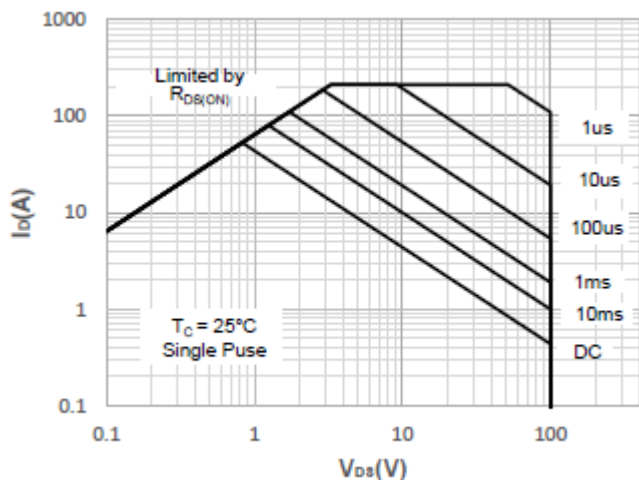
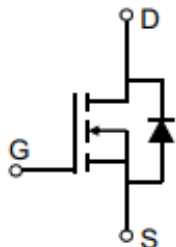
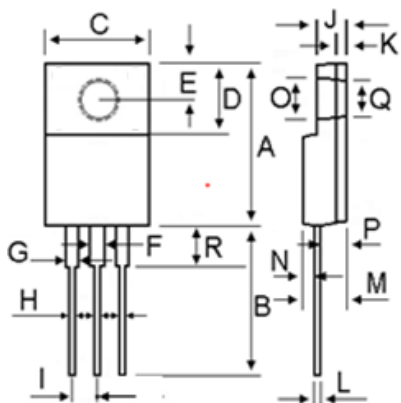


Figure 15. Maximum Safe Operating Area

- Circuit diagram



- 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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