

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	5.5mΩ@10V	140A

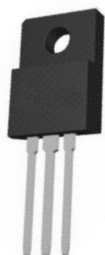
Feature

- Advanced SGT technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

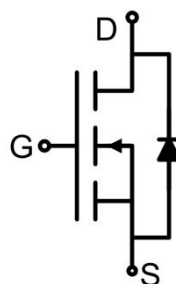
- DC/DC Converter
- LED Backlighting
- Power Management Switches

Package

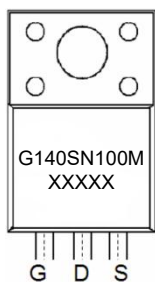


ITO-220AB

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (V _{GS} =10V)	I _D	140	A
Continuous Drain Current (V _{GS} =10V, T _c =100°C)	I _D (100°C)	85	A
Pulsed Drain Current	I _{DM}	417	A
Power Dissipation ¹⁾	P _D	167	W
Single Pulse Avalanche Energy	E _{AS}	245	mJ
Thermal Resistance, Junction-to-Case	R _{θJC}	0.88	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V,V _{GS} =0V,T _J =25°C			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	2.9	4	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		4.6	5.5	mΩ
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V,f =1MHz		2816		pF
Output Capacitance	C _{oss}			614		
Reverse Transfer Capacitance	C _{rss}			7.4		
Total Gate Charge	Q _g	V _{DS} =50V,V _{GS} =10V,I _D =20A		42		nC
Gate-Source Charge	Q _{gs}			9.7		
Gate-Drain Charge	Q _{gd}			10.6		
Turn-on delay time	t _{d(on)}	V _{DS} =50V,V _{GS} =10V, I _D =20A, R _G =3Ω		13		nS
Turn-on rise time	t _r			25		
Turn-off delay time	t _{d(off)}			43		
Turn-off fall time	t _f			37		
Source-Drain Diode characteristics						
Diode Forward Current ^{1,3)}	I _S	V _G =V _D =0V,Force Current			167	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _F =20A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =20A, dI/dt = 100A/μs		60		nS
Reverse Recovery Charge	Q _{rr}			61		nC

Notes:

- 1) The power dissipation is limited by 150°C junction temperature.
- 2) The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
- 3) The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

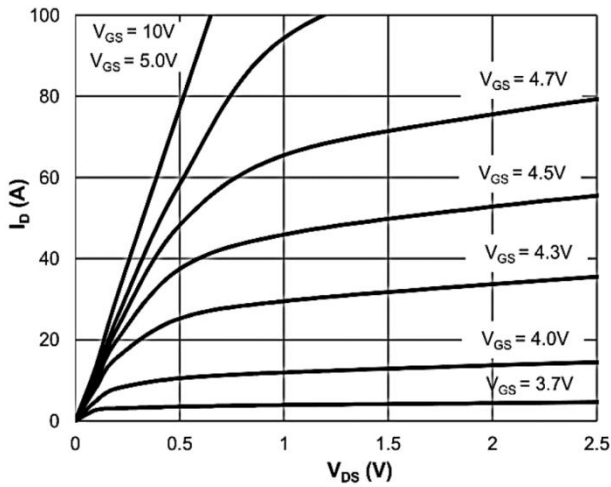


Figure 1: Saturation Characteristics

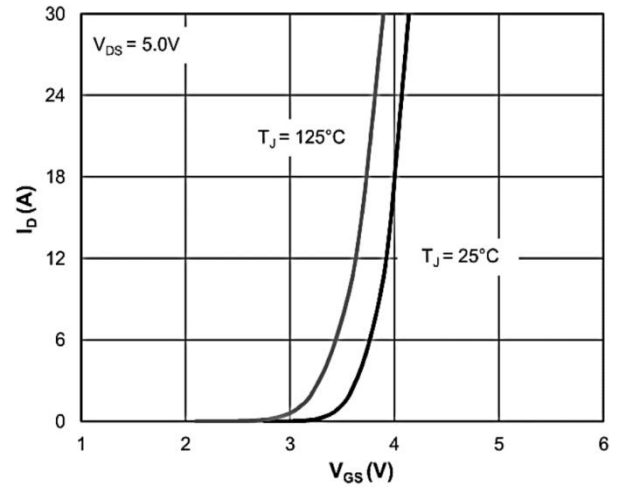


Figure 2: Transfer Characteristics

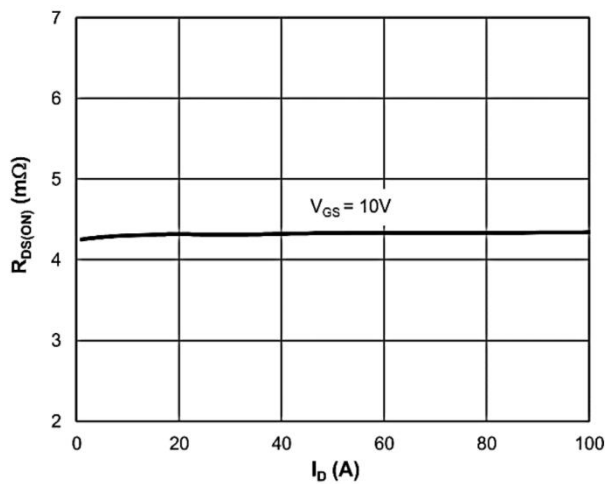


Figure 3: $R_{DS(ON)}$ vs. Drain Current

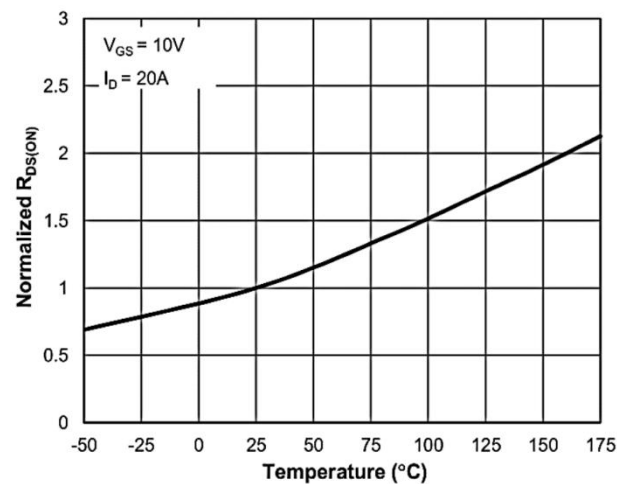


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

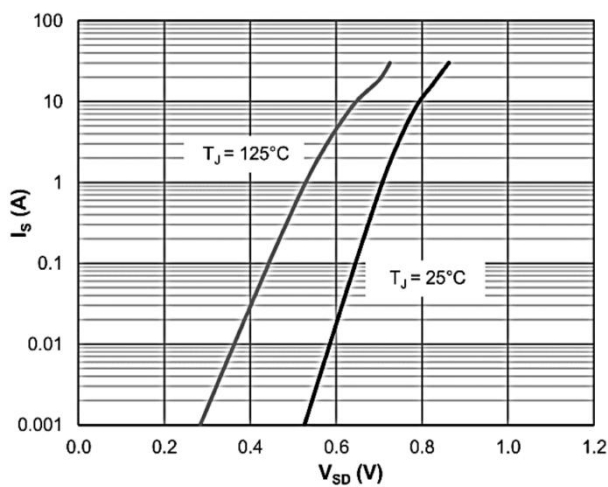


Figure 5: Body-Diode Characteristics

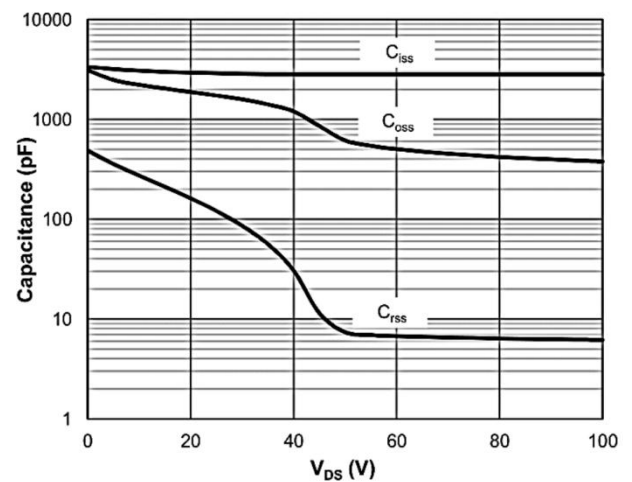


Figure 6: Capacitance Characteristics

Typical Characteristics

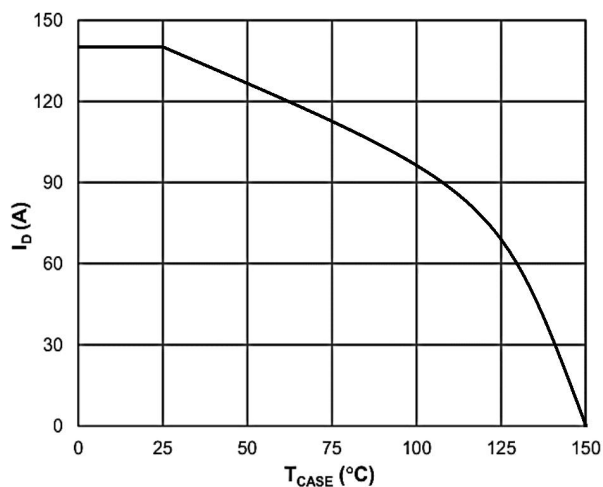


Figure 7: Current De-rating

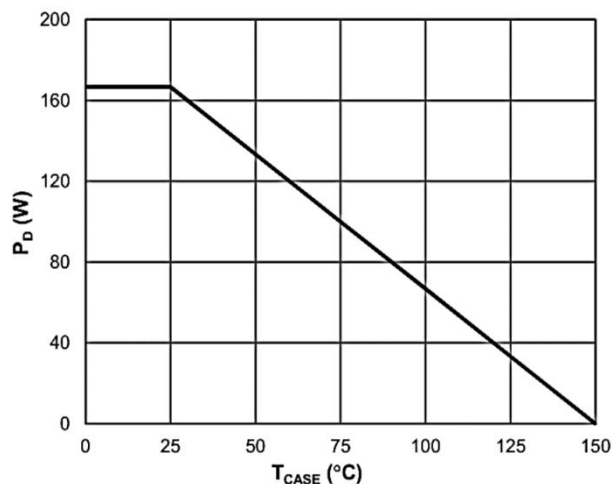


Figure 8: Power De-rating

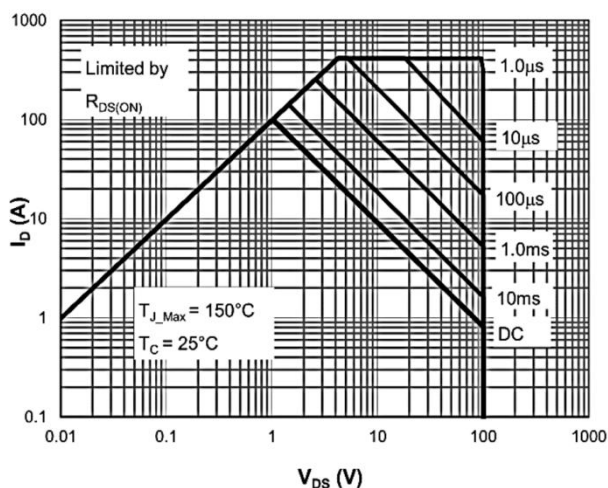


Figure 9: Maximum Safe Operating Area

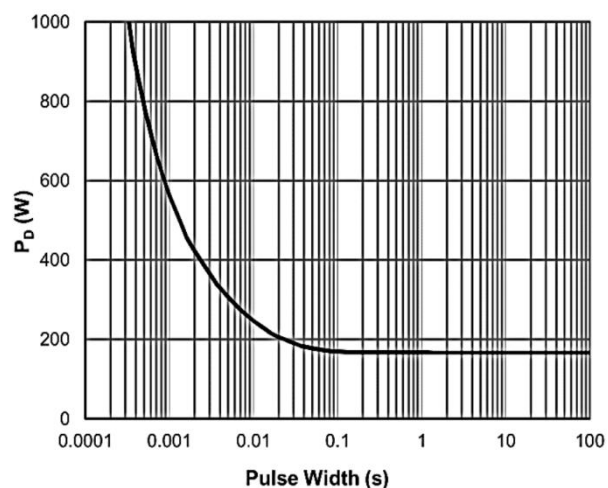


Figure 10: Single Pulse Power Rating, Junction-to-Case

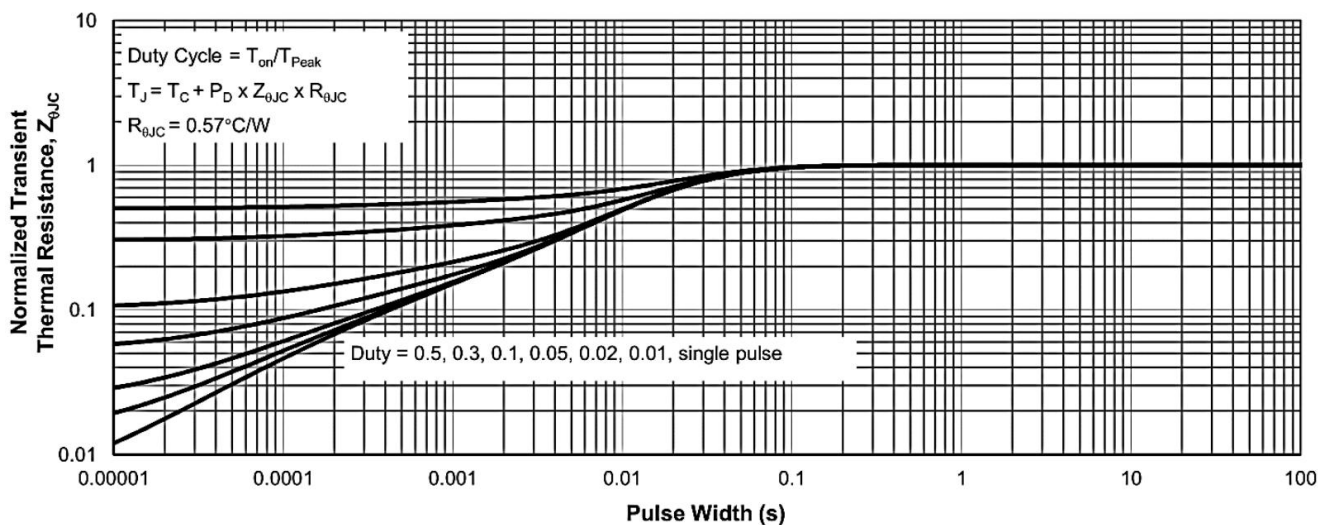
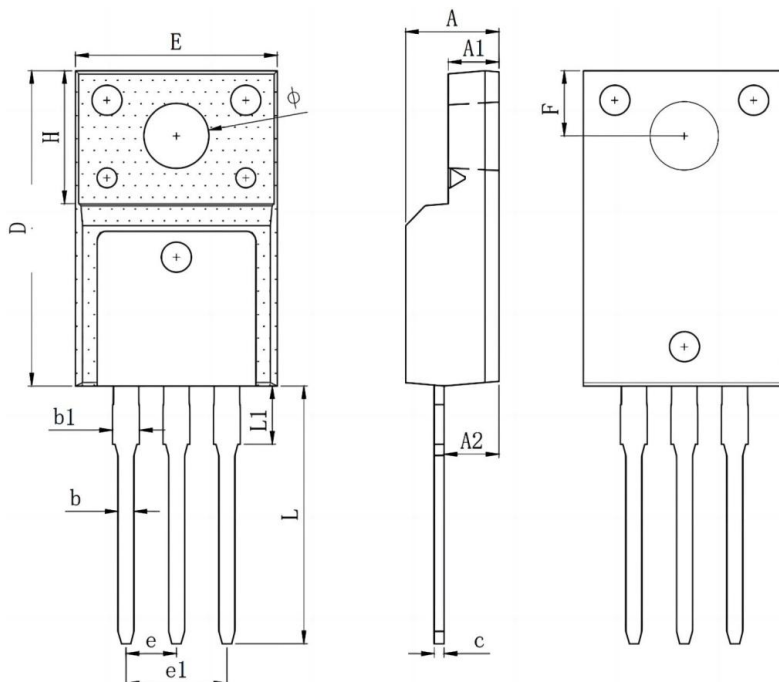


Figure 11: Normalized Maximum Transient Thermal Impedance

ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.500	5.000	0.177	0.197
A1	2.340	2.840	0.092	0.112
A2	2.400	3.400	0.094	0.134
b	0.700	0.950	0.028	0.037
b1	1.050	1.550	0.041	0.061
c	0.400	0.650	0.016	0.026
D	15.570	16.170	0.613	0.637
H	6.700 REF.		0.264 REF.	
E	9.860	10.460	0.388	0.412
e	2.540 BSC.		0.100 BSC.	
e1	5.080 BSC.		0.200 BSC.	
L	12.650	13.300	0.498	0.524
L1	2.780	3.380	0.109	0.133
F	3.150	3.550	0.124	0.140
φ	3.000	3.650	0.118	0.144