

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
700V	290mΩ@10V	15A

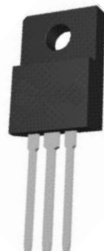
Feature

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements
- Suffix “-Q1” for AEC-Q101

Application

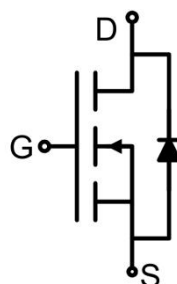
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)

Package

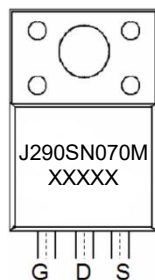


ITO-220AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage(V _{GS} =0V)	V _{DS}	700	V
Gate-Source Voltage(V _{DS} =0V) AC(f > 1Hz)	V _{GS}	±30	V
Continuous Drain Current(T _C =25°C)	I _D	15	A
Continuous Drain Current(T _C =100°C)	I _D (100°C)	10	
Pulsed Drain Current ¹⁾	I _{DM}	60	A
Power Dissipation(T _C =25°C)	P _D	33.2	W
Single Pulse Avalanche Energy ²⁾	E _{AS}	304	mJ
Thermal Resistance,Junction-to-Case	R _{θJC}	3.76	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=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	700			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =700V, V _{GS} =0V, T _C =25℃			1	μA
		V _{DS} =700V, V _{GS} =0V, T _C =125℃			100	
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	3	3.5	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A		260	290	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz		1210		pF
Output Capacitance	C _{oss}			74		
Reverse Transfer Capacitance	C _{rss}			0.2		
Total Gate Charge	Q _g	V _{DS} =480V, V _{GS} =10V, I _D =15A		24.7		nC
Gate-Source Charge	Q _{gs}			8.2		
Gate-Drain Charge	Q _{gd}			8.5		
Turn-on delay time	t _{d(on)}	V _{DD} =420V, I _D =8A, R _G =2.3Ω, V _{GS} =10V		15		nS
Turn-on rise time	t _r			10		
Turn-off delay time	t _{d(off)}			57		
Turn-off fall time	t _f			9		
Source-Drain Diode characteristics						
Source-drain current	I _{SD}	T _C =25℃			15	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _{SD} =15A, T _J =25℃			1.2	V
Reverse Recovery Time	t _{rr}	I _F =7.5A, di/dt=100A/us, T _J =25℃		240		nS
Reverse Recovery Charge	Q _{rr}			2		μC
Peak Reverse Recovery Current	I _{rrm}			17		A

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

- 2) $T_J=25^{\circ}\text{C}$, $V_{DD}=50\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$.
3) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure1. Safe operating area

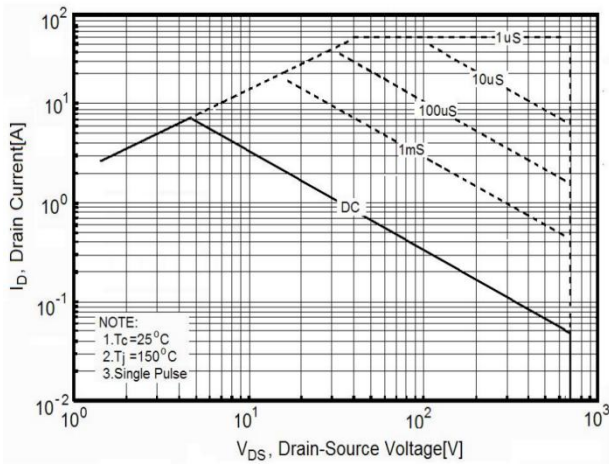


Figure2. Source-Drain Diode Forward Voltage

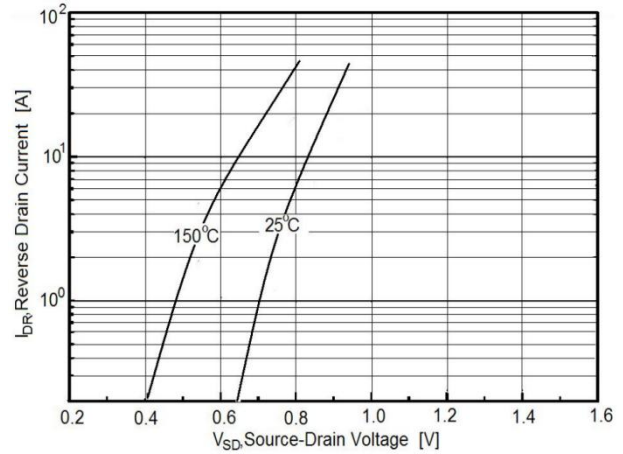


Figure3. Output characteristics

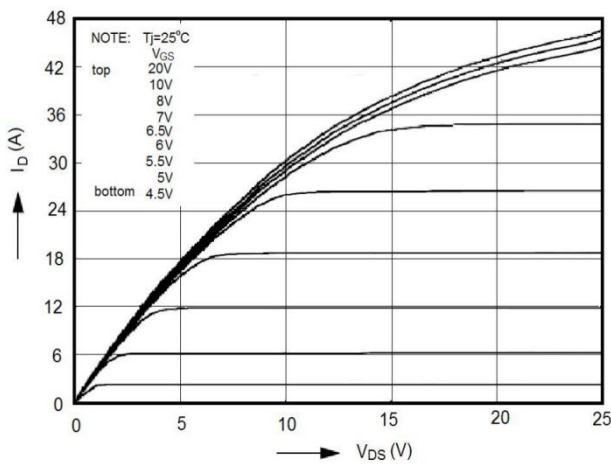


Figure4. Transfer characteristics

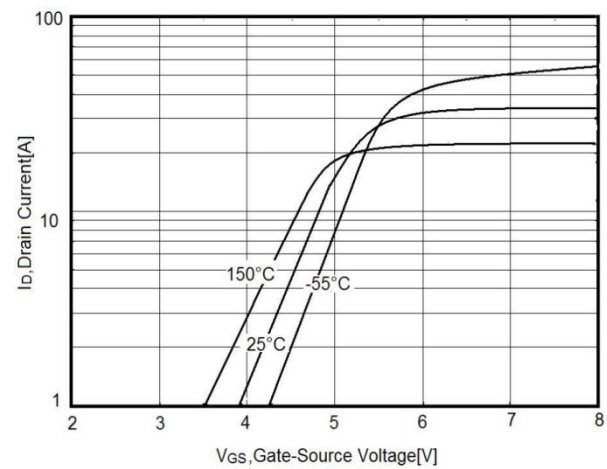


Figure5. Static drain-source on resistance

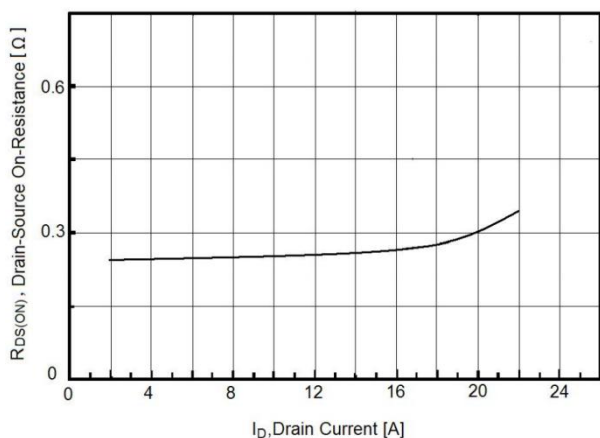
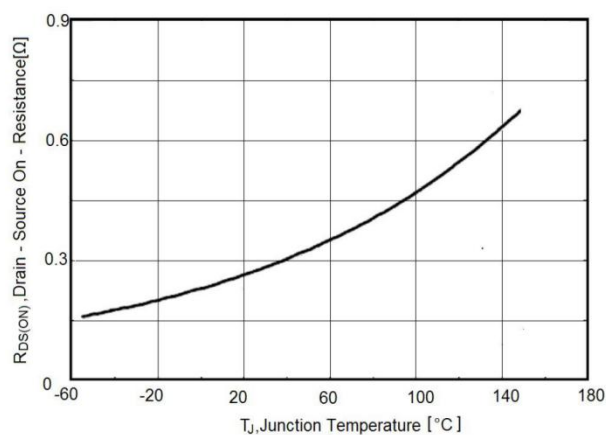


Figure6. $R_{DS(ON)}$ vs Junction Temperature



Typical Characteristics

Figure7. BV_{DSS} vs Junction Temperature

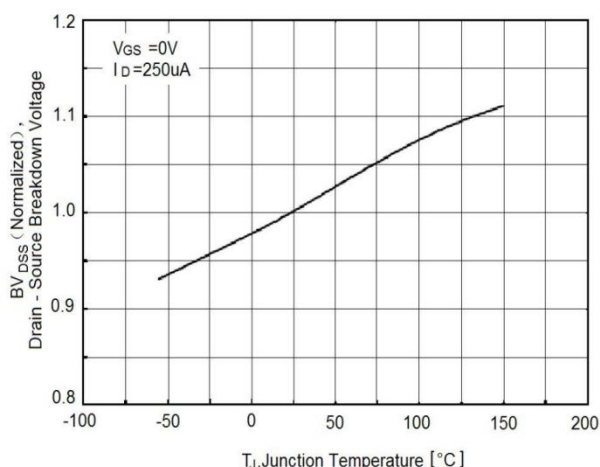


Figure8. Maximum I_D vs Junction Temperature

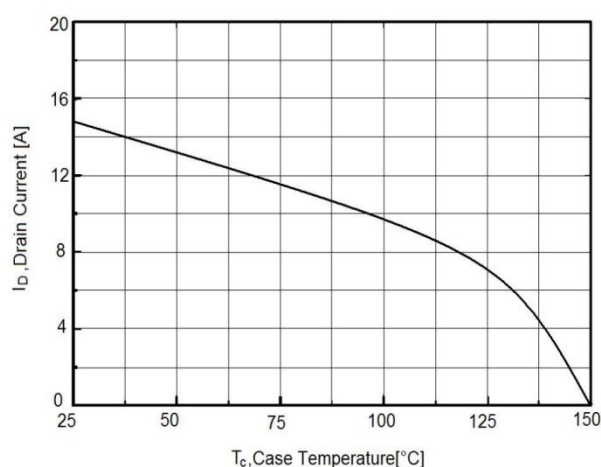


Figure9. Gate charge waveforms

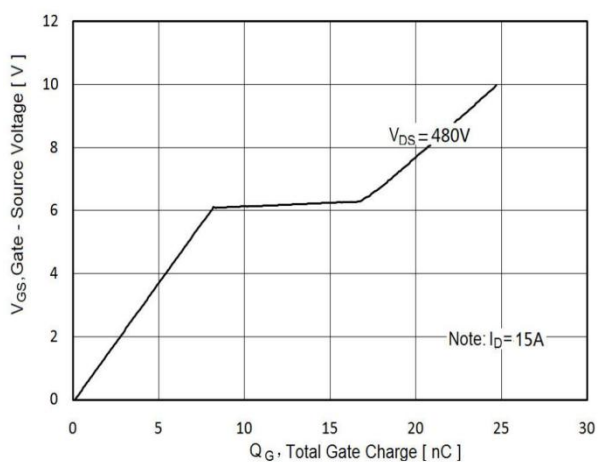


Figure10. Capacitance

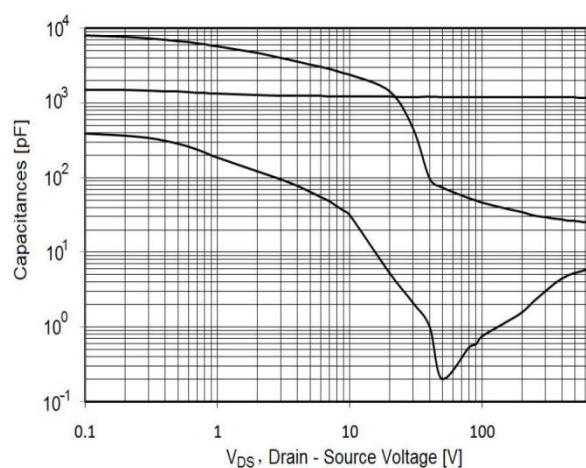
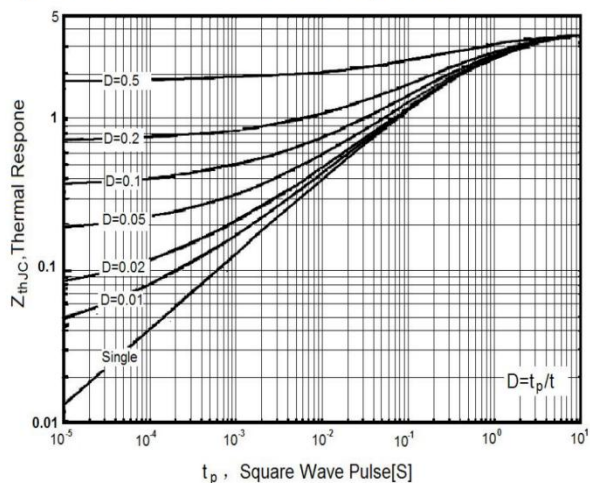
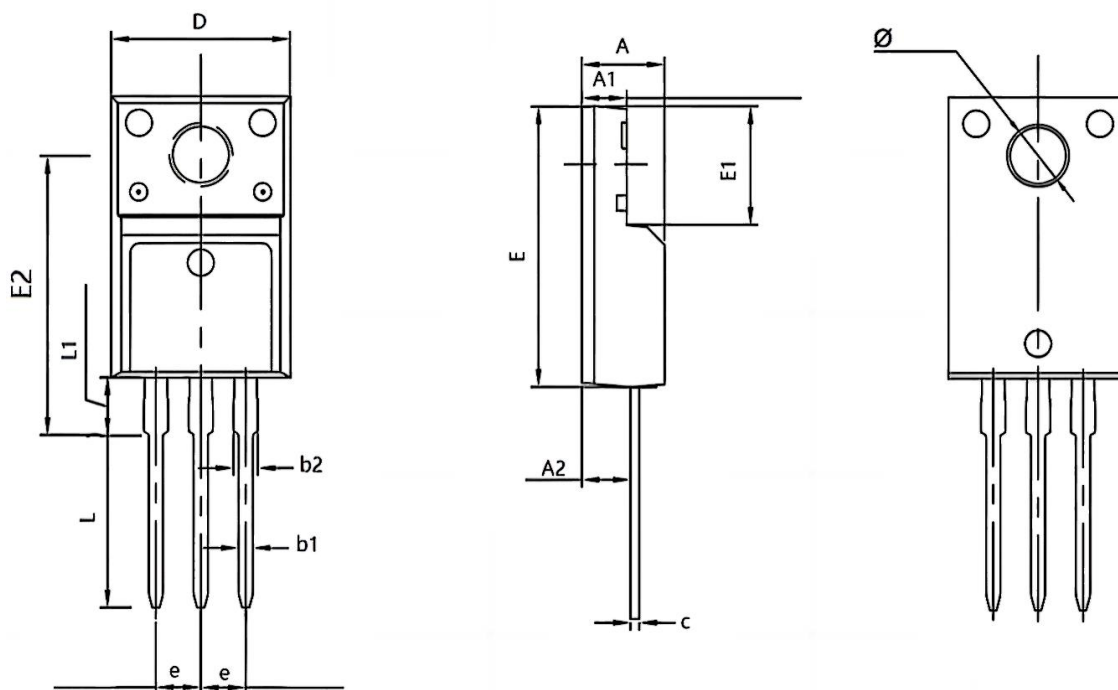


Figure11. Transient Thermal Impedance



ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.500	4.900	0.177	0.193
A1	2.340	2.740	0.092	0.108
A2	2.150	2.960	0.085	0.117
b1	0.700	0.900	0.028	0.035
b2	1.180	1.580	0.046	0.062

c	0.400	0.600	0.016	0.024
D	9.860	10.460	0.388	0.412
E	15.670	16.070	0.617	0.633
E1	6.480	6.900	0.255	0.272
E2	15.500	16.100	0.610	0.634
e	2.540 TYP		0.100 TYP	
ϕ	3.080	3.500	0.121	0.138
L	12.640	13.240	0.498	0.521
L1	3.030	3.430	0.119	0.135