

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	18mΩ@10V	75A

Feature

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

Application

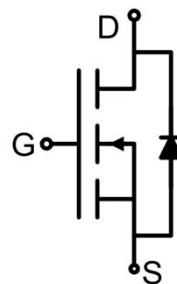
- Automotive lighting
- Load switch
- Uninterruptible power supply

Package

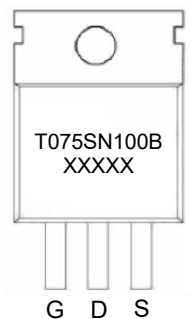


TO-220AB

Circuit diagram



Marking



Absolute maximum ratings($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS}=10\text{V}$)	I_D	75	A
Continuous Drain Current ($V_{GS}=10\text{V}$, $T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	38	A
Pulsed Drain Current ¹⁾	I_{DM}	236	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	108	mJ
Power Dissipation ³⁾	P_D	146	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.86	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, 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			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A		11	18	mΩ
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		5000		pF
Output Capacitance	C _{oss}			250		
Reverse Transfer Capacitance	C _{rss}			170		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =30A		94		nC
Gate-Source Charge	Q _{gs}			16		
Gate-Drain Charge	Q _{gd}			24		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =2A R _G =2.5Ω, R _L =15Ω		15		nS
Turn-on rise time	t _r			11		
Turn-off delay time	t _{d(off)}			52		
Turn-off fall time	t _f			13		
Source-Drain Diode characteristics						
Diode Continuous Current	I _S				75	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =30A			1.2	V
Reverse recover time	T _{rr}	I _F =28A, di/dt =100A/us		33		nS
Reverse recovery charge	Q _{rr}			54		nC

Notes:

- 1) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 2) The EAS data shows Max. rating. The test condition is $V_{DS}=72\text{V}$, $V_{GS}=10\text{V}$, $L=0.1\text{mH}$, $I_{AS}=40\text{A}$.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

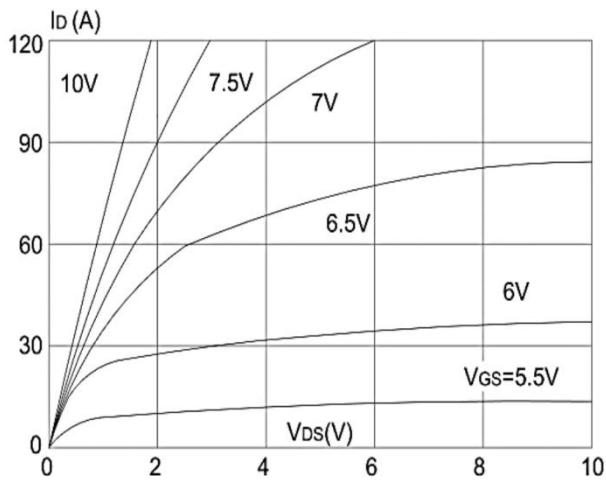


Figure 1: Output Characteristics

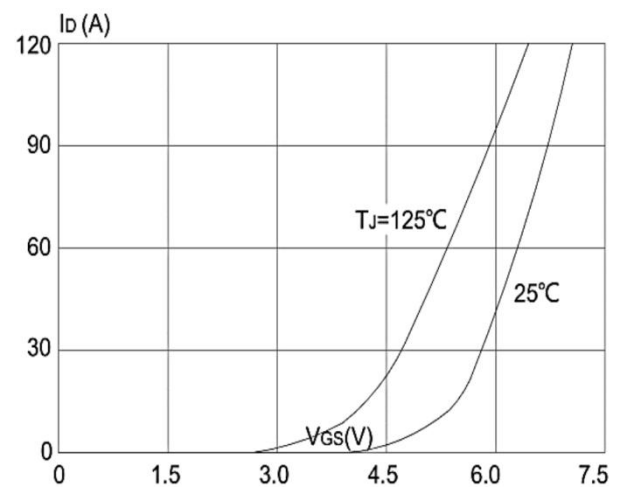


Figure 2: Typical Transfer Characteristics

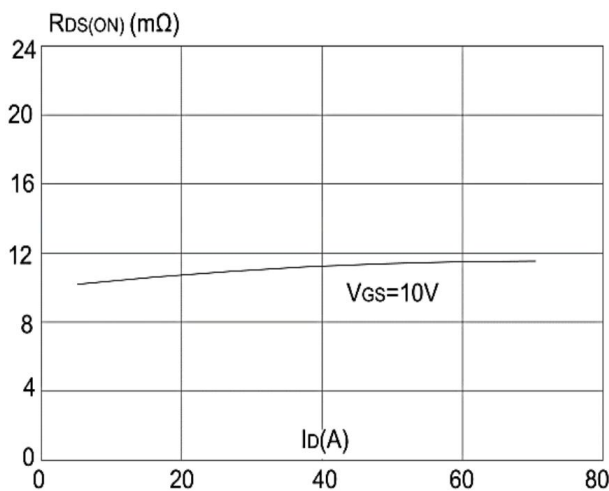


Figure 3: On-resistance vs. Drain Current

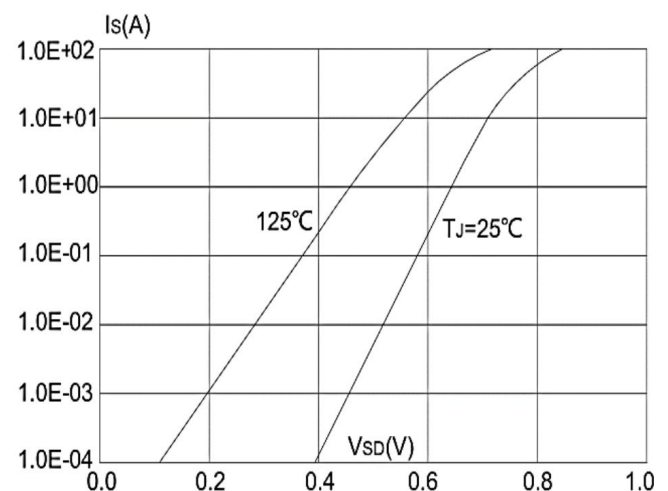


Figure 4: Body Diode Characteristics

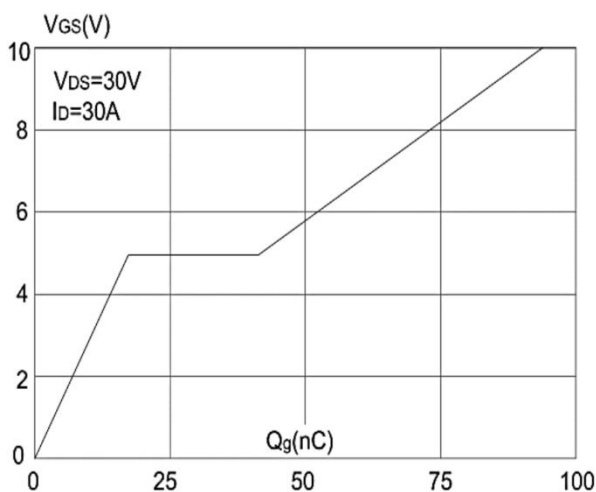


Figure 5: Gate Charge Characteristics

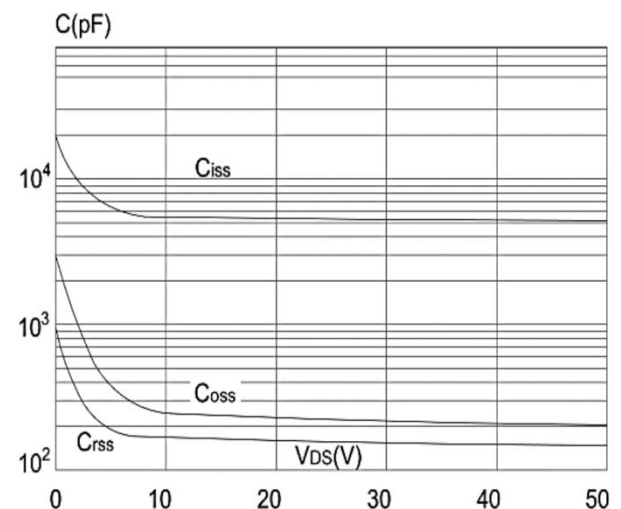


Figure 6: Capacitance Characteristics

Typical Characteristics

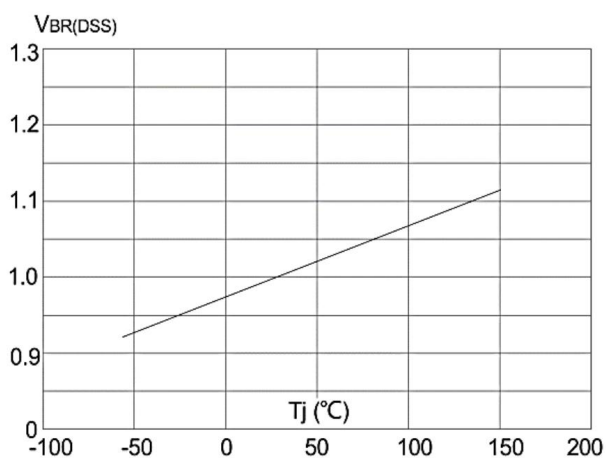


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

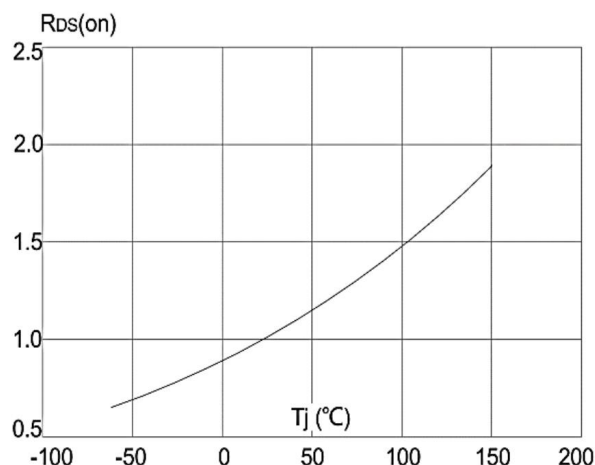


Figure 8: Normalized on Resistance vs. Junction Temperature

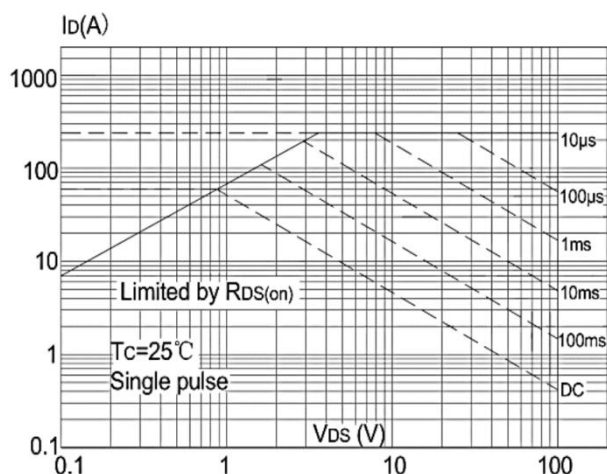


Figure 9: Maximum Safe Operating Area

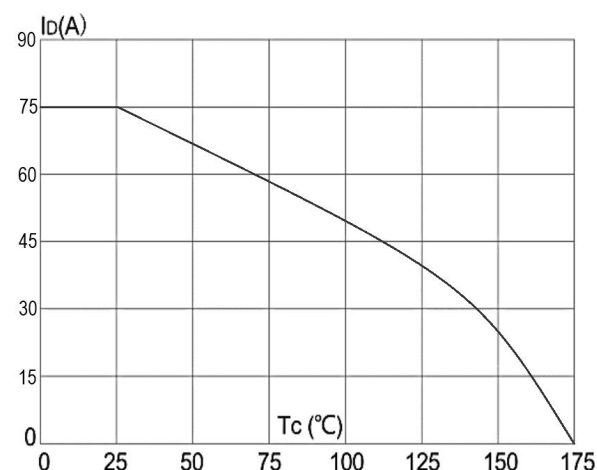


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

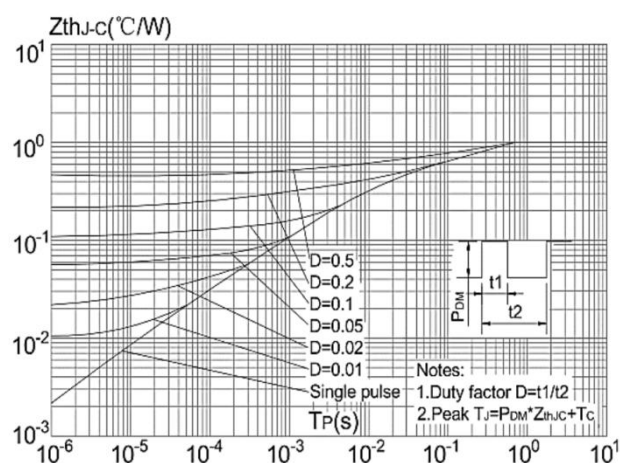
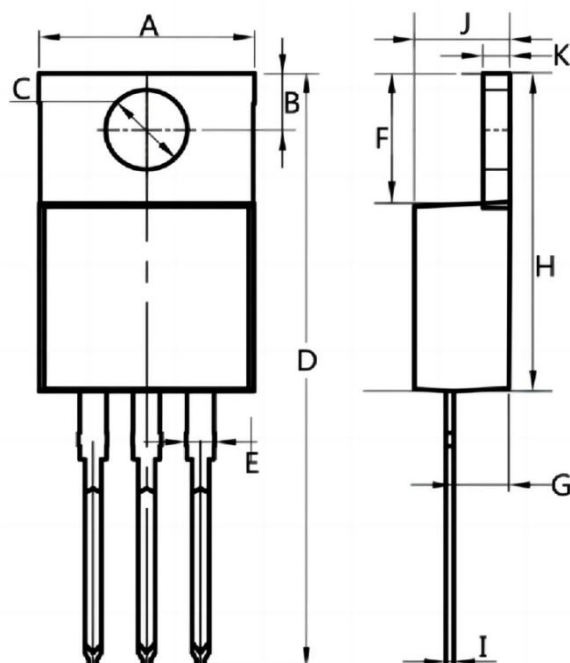


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	10.000	10.400	0.394	0.409
B	2.500	3.000	0.098	0.118
C	3.500	4.000	0.138	0.157
D	28.000	30.000	1.102	1.181
E	1.100	1.500	0.043	0.059
F	6.200	6.600	0.244	0.260
G	2.900	3.300	0.114	0.130
H	15.000	16.000	0.591	0.630
I	0.350	0.450	0.014	0.018
J	4.300	4.700	0.169	0.185
K	1.200	1.400	0.047	0.055