

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	3.9mΩ@10V	135A

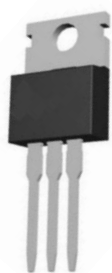
Feature

- High density cell design for very low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- Suffix“-Q1”for AEC-Q101

Application

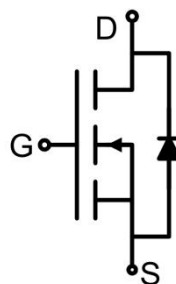
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

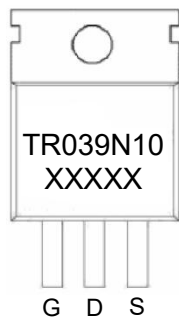


TO-220AB

Circuit diagram



Marking



Absolute maximum ratings (Tc=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	I _D	135	A
Continuous Drain Current (100°C)	I _D (100°C)	108	A
Pulsed Drain Current	I _{DM}	540	A
Power Dissipation	P _D	220	W
Thermal Resistance, Junction-to-Case	R _{θJC}	0.68	°C/W
Single pulse avalanche energy	E _{AS}	730	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (Tc=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			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	2.0	3.0	4.0	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 65A		3.65	3.9	mΩ
Forward transconductance ¹⁾	g _{FS}	V _{DS} = 5V, I _D = 65A		90		S
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz		9500		pF
Output Capacitance	C _{oss}			650		
Reverse Transfer Capacitance	C _{rss}			40		
Total Gate Charge	Q _g	V _{DS} = 50V, V _{GS} = 10V, I _D = 65A		125		nC
Gate-Source Charge	Q _{gs}			40.5		
Gate-Drain Charge	Q _{gd}			33		
Turn-on delay time	t _{d(on)}	V _{DD} = 50V, V _{GS} = 10V I _D = 65A, R _{GEN} = 1.6Ω		20		nS
Turn-on rise time	t _r			11.5		
Turn-off delay time	t _{d(off)}			48		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				135	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = 65A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = I _S di/dt = 100A/μs ¹⁾		76		nS
Reverse Recovery Charge	Q _{rr}			150		nC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

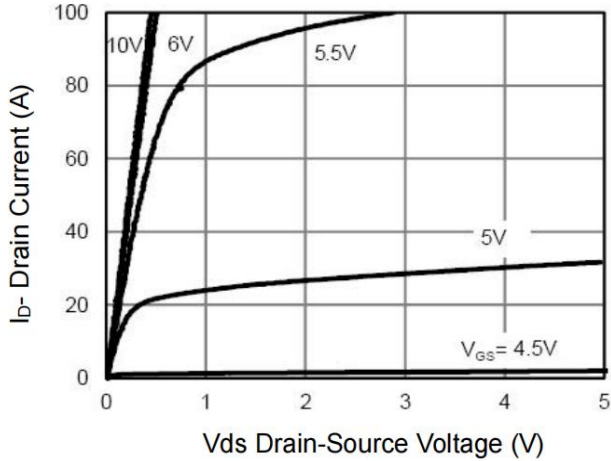


Figure 1 Output Characteristics

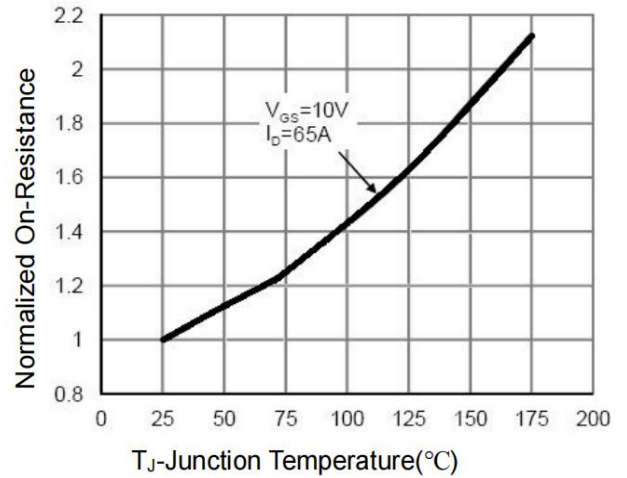


Figure 2 Rds(on)-Junction Temperature

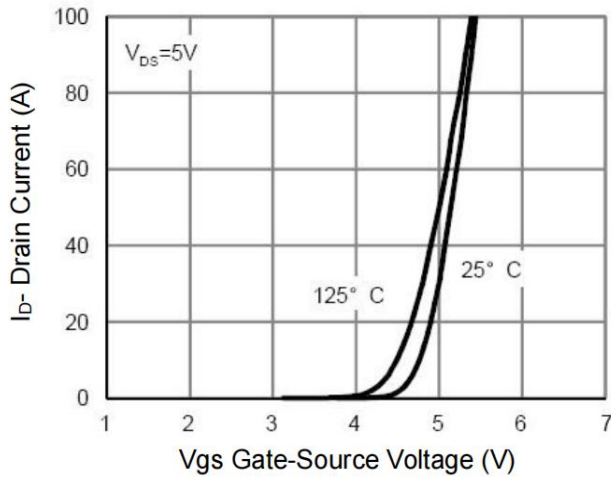


Figure 3 Transfer Characteristics

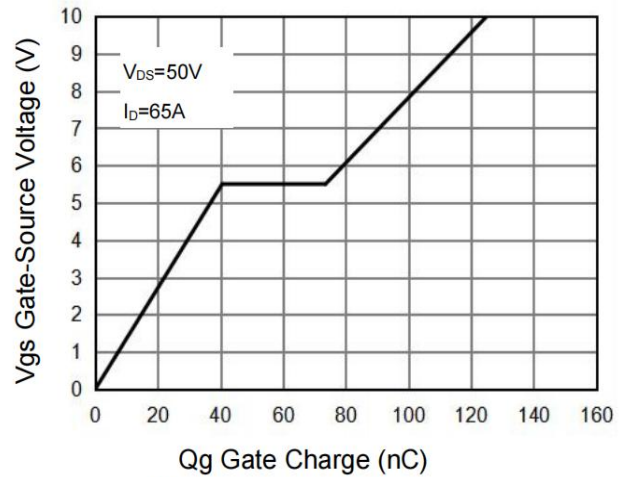


Figure 4 Gate Charge

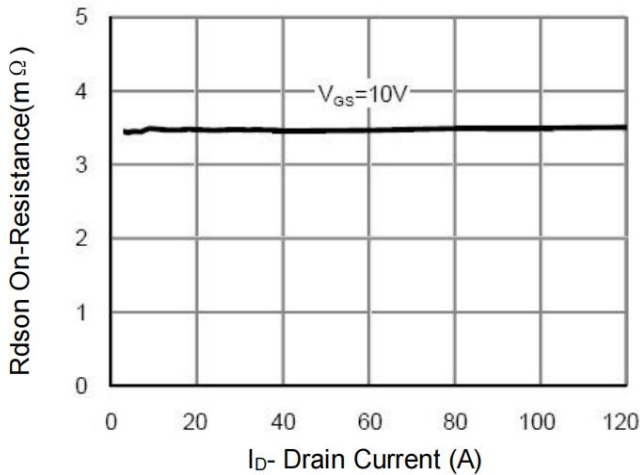


Figure 5 Rds(on)- Drain Current

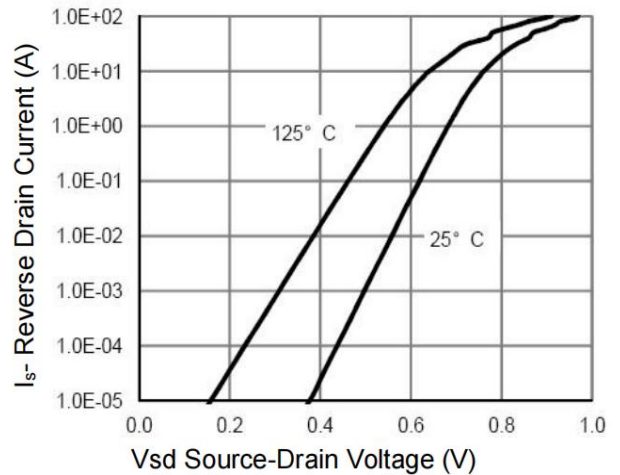


Figure 6 Source- Drain Diode Forward

Typical Characteristics

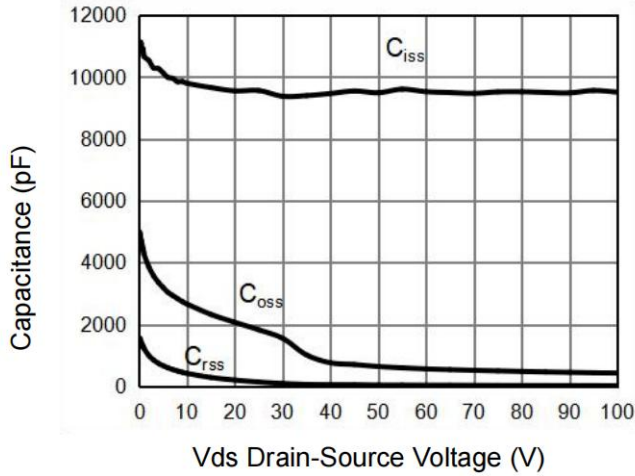


Figure 7 Capacitance vs Vds

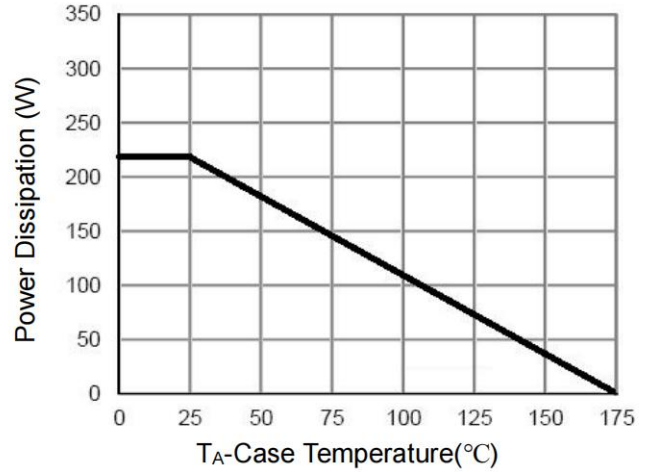


Figure 8 Power De-rating

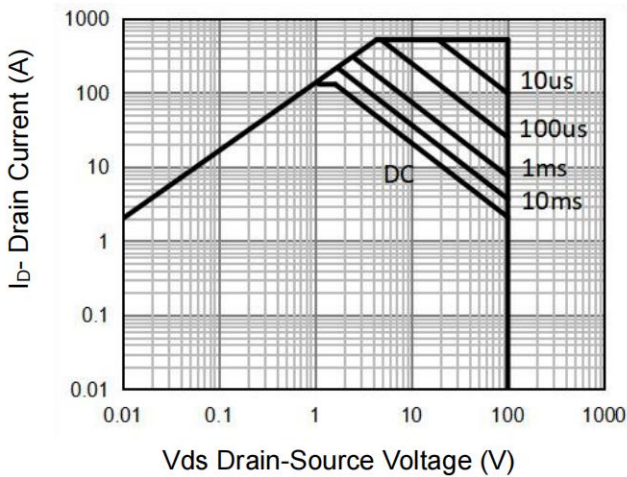


Figure 9 Safe Operation Area

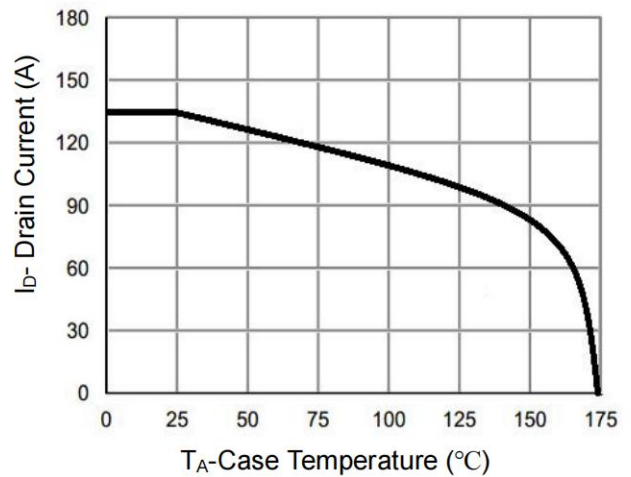


Figure 10 Current De-rating

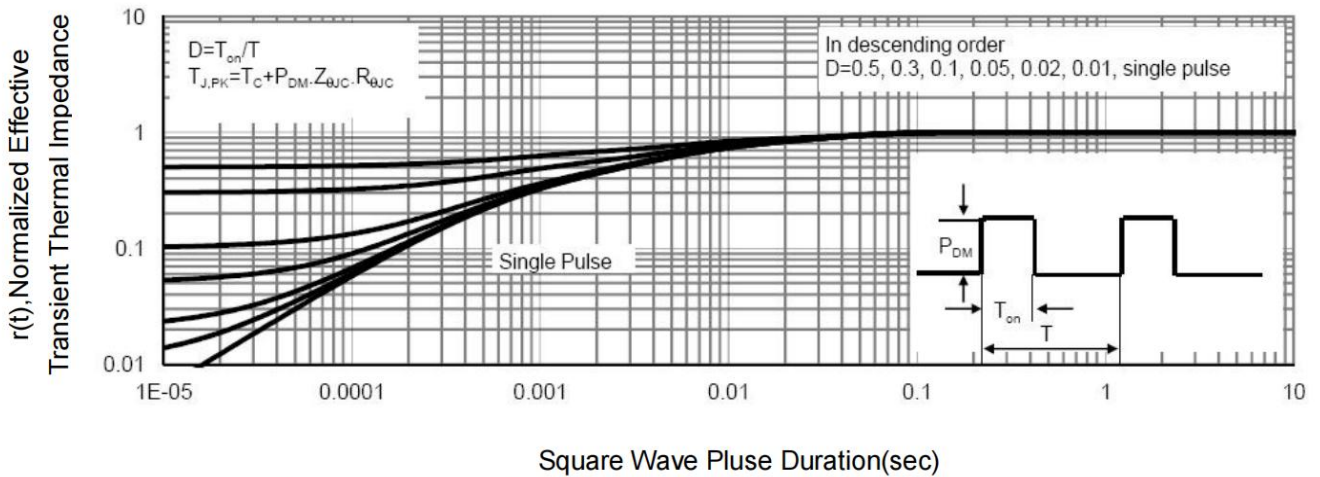
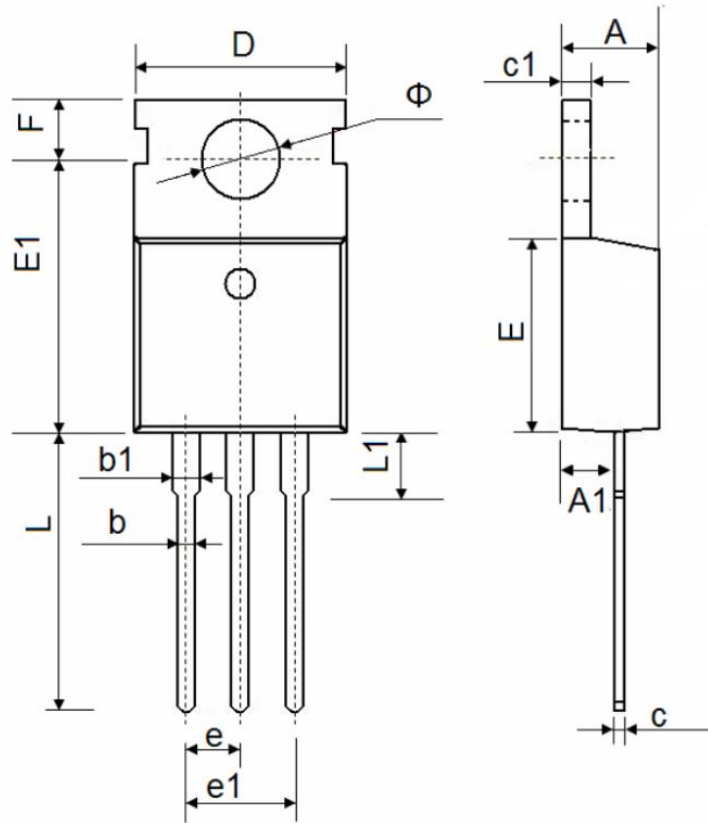


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.200	4.700	0.165	0.185
A1	2.250	2.550	0.089	0.100
b	0.700	0.910	0.028	0.036
b1	1.170	1.450	0.046	0.057
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.700	10.250	0.382	0.404
E	8.950	9.750	0.352	0.383
E1	12.550	13.100	0.494	0.516
e	2.540 TYP.		0.110 TYP.	
e1	5.080 BSC.		0.200 BSC.	
L	12.750	13.500	0.502	0.531
L1	2.750	3.350	0.108	0.132
F	2.650	2.950	0.104	0.116
Φ	3.400	3.800	0.134	0.150