

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	32mΩ@10V	30A
	35mΩ@4.5V	

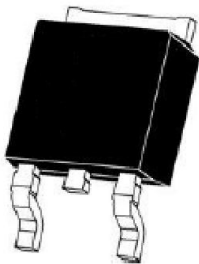
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Suffix "-Q1" for AEC-Q101

Application

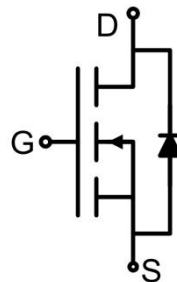
- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

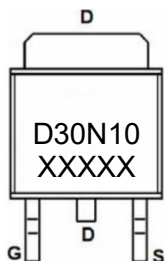


TO-252AB

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	I_D	30	A
Pulsed Drain Current	I_{DM}	120	A
Power Dissipation	P_D	85	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.8	$^{\circ}\text{C}/\text{W}$
Single pulse avalanche energy	E_{AS}	200	mJ
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Electrical characteristics ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	100			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100\text{V}, V_{GS} = 0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.3		2.5	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$			32	m Ω
		$V_{GS} = 4.5\text{V}, I_D = 10\text{A}$			35	
Dynamic characteristics²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 50\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		2479		pF
Output Capacitance	C_{oss}			96		
Reverse Transfer Capacitance	C_{rss}			79		
Total Gate Charge	Q_g	$V_{DS} = 50\text{V}, V_{GS} = 10\text{V}, I_D = 10\text{A}$		67.2		nC
Gate-Source Charge	Q_{gs}			9.4		
Gate-Drain Charge	Q_{gd}			15.5		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 50\text{V}, V_{GS} = 10\text{V}, R_L = 5\Omega$ $R_{GEN} = 3\Omega$		9		nS
Turn-on rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			32		
Turn-off fall time	t_f			8		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I_S				30	A
Diode Forward voltage	V_{DS}	$V_{GS} = 0\text{V}, I_S = 10\text{A}$			1.2	V
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}\text{C}, I_F = 10\text{A}$ $di/dt = 100\text{A}/\mu\text{s}$ ¹⁾		32		nS
Reverse Recovery Charge	Q_{rr}				53	

Notes:

1) Pulse Test: Pulse Width < 300 μs , Duty Cycle $\leq 2\%$.

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

Typical Characteristics

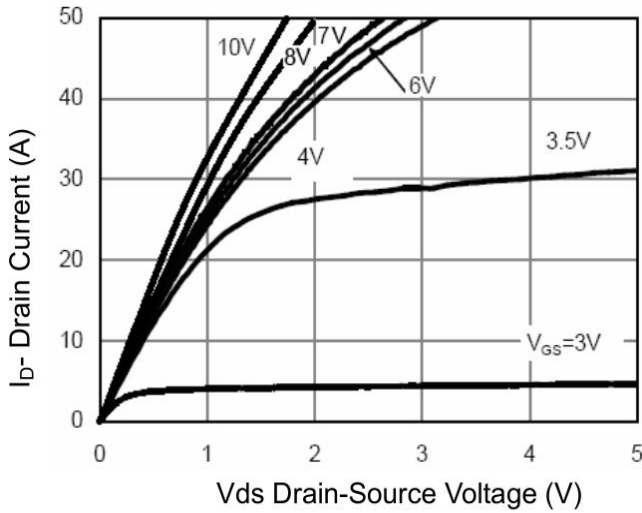


Figure 1 Output Characteristics

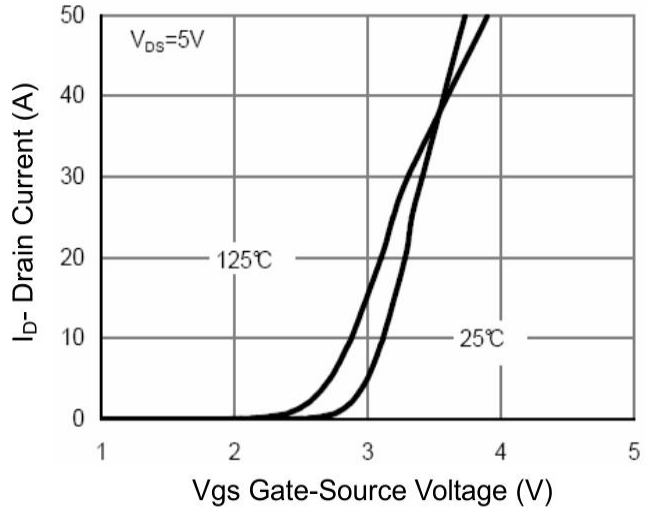


Figure 2 Transfer Characteristics

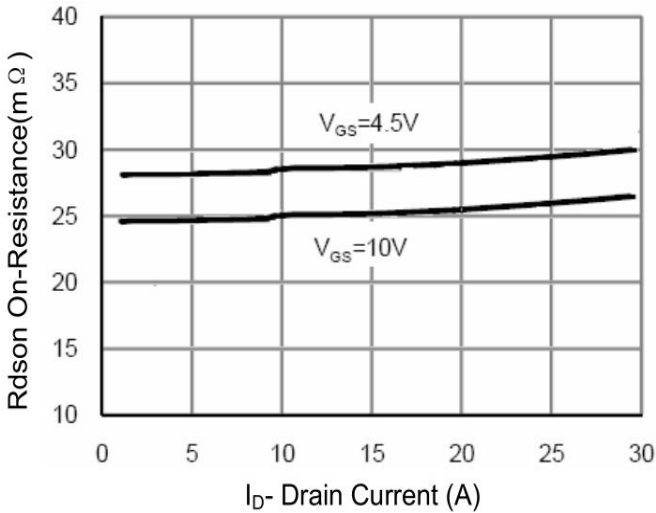


Figure 3 Rdson- Drain Current

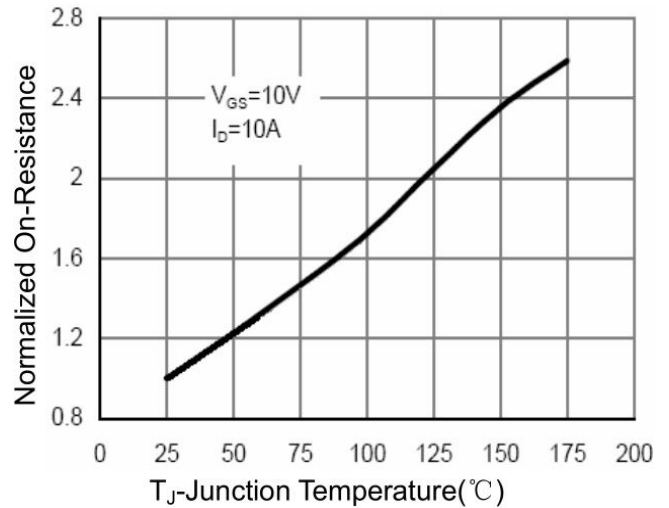


Figure 4 Rdson-Junction Temperature

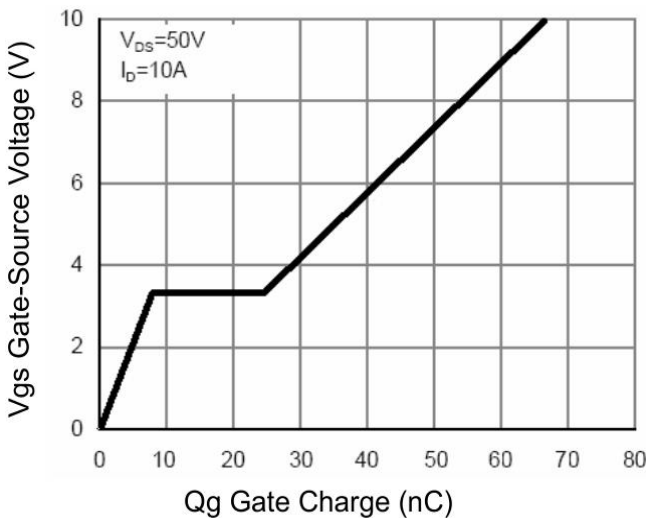


Figure 5 Gate Charge

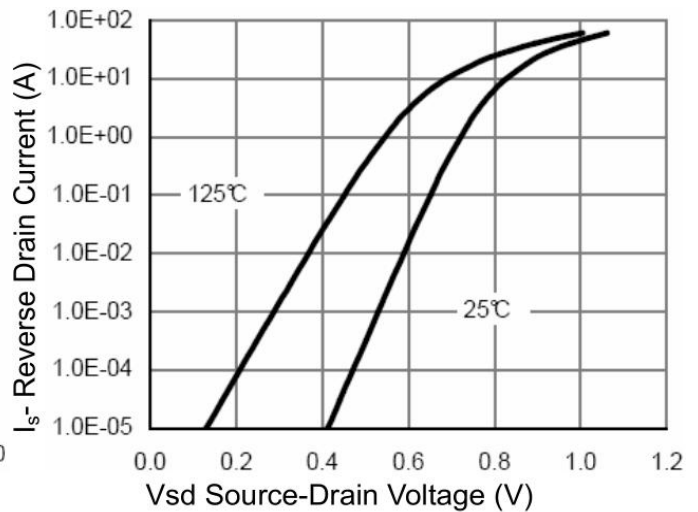


Figure 6 Source- Drain Diode Forward

Typical Characteristics

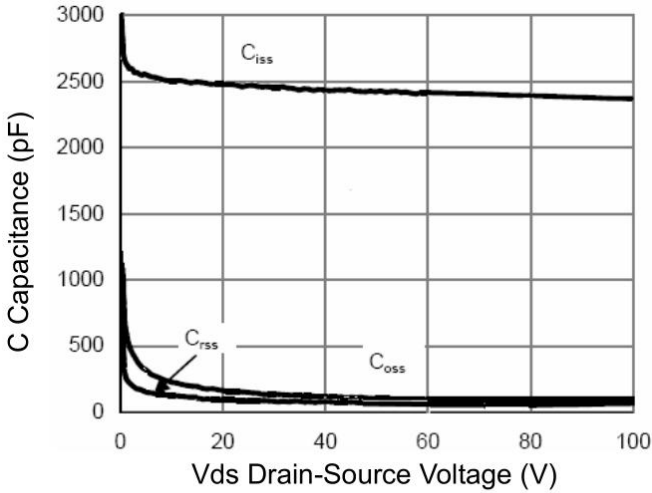


Figure 7 Capacitance vs Vds

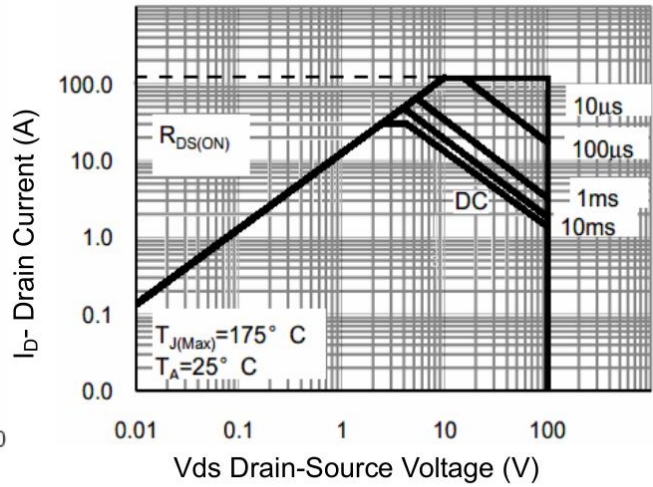


Figure 8 Safe Operation Area

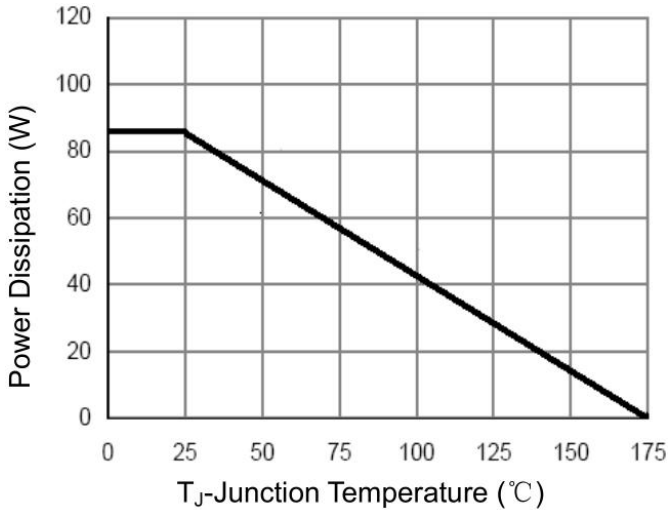


Figure 9 Power De-rating

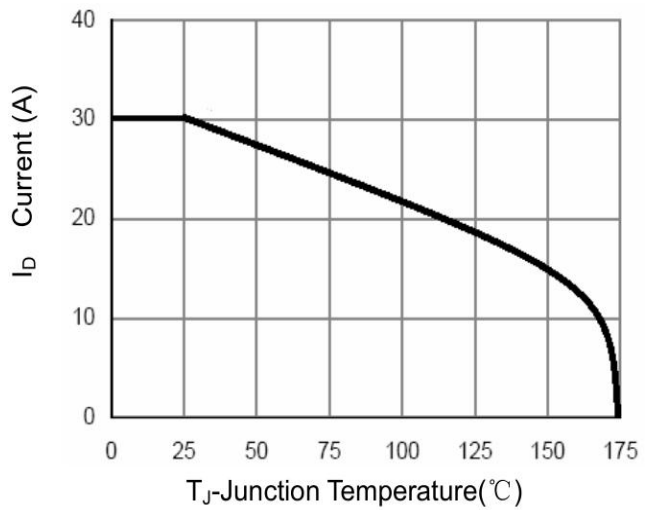


Figure 10 Id Current- Junction Temperature

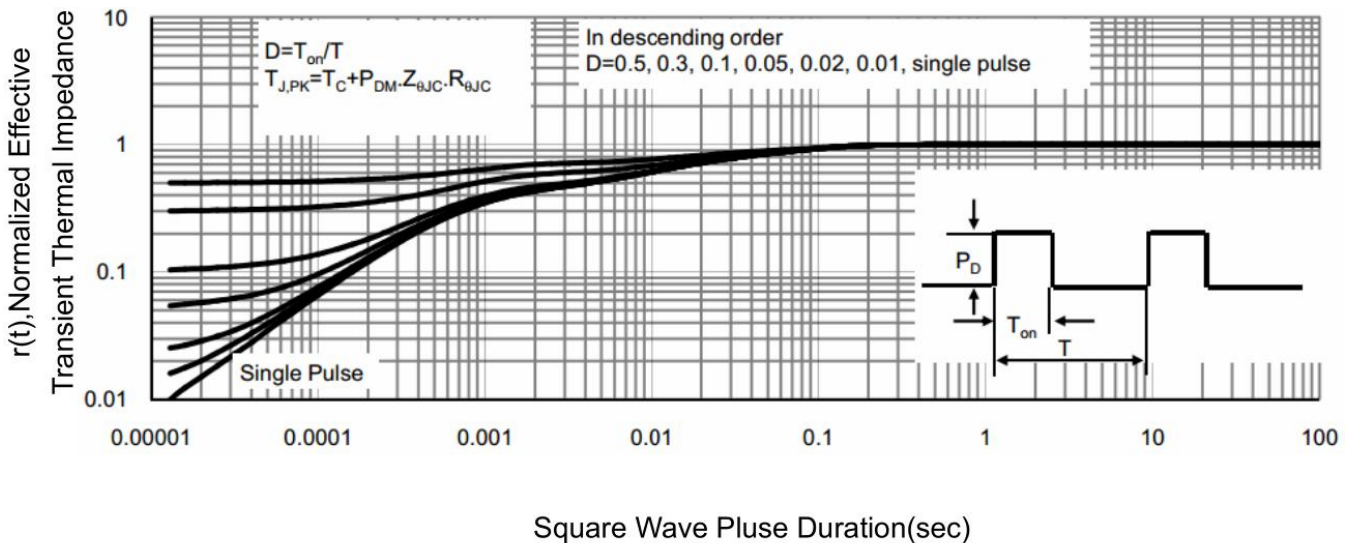
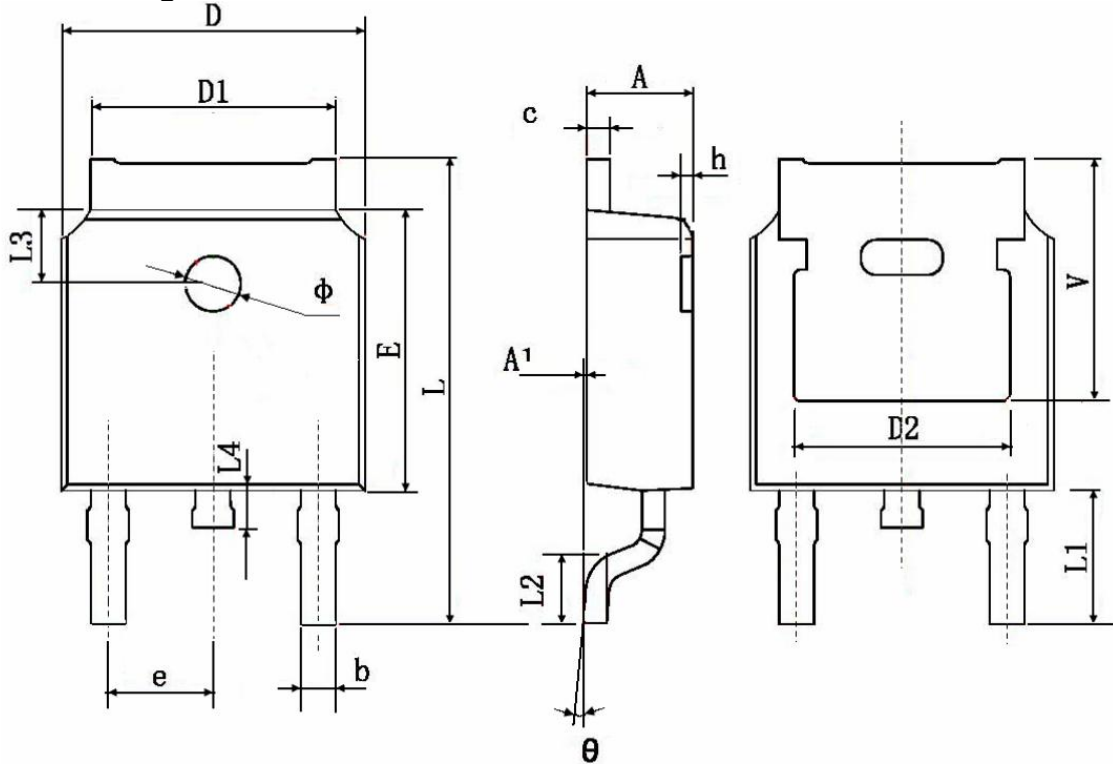


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.043
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830TYP		0.190TYP	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900REF		0.114REF	
L2	1.400	1.700	0.055	0.067
L3	1.600TYP		0.063TYP	
L4	0.600	1.000	0.024	0.039
θ	0°	8°	0°	8°
ϕ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
v	5.350TYP		0.211TYP	