

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-100V	110mΩ@-10V	-18A
	120mΩ@-4.5V	

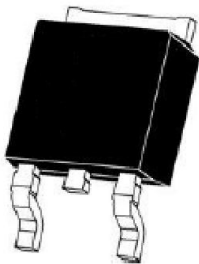
## Feature

- Split gate trench MOSFET technology
- Low Rdson & FOM
- Excellent stability and uniformity
- Extremely low switching loss
- Suffix "-Q1" for AEC-Q101

## Application

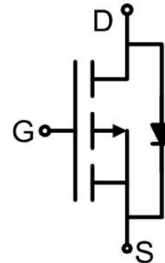
- Power equipment
- Power management

## Package

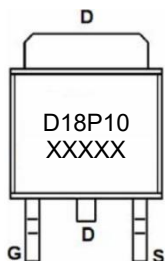


TO-252AB

## Circuit diagram



## Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	-18	A
Continuous Drain Current(T <sub>c</sub> =100°C)	I <sub>D</sub> (100°C)	-12	A
Pulsed Drain Current	I <sub>DM</sub>	-72	A
Power Dissipation	P <sub>D</sub>	72	W
Single pulse avalanche energy	E <sub>AS</sub>	72	mJ
Thermal Resistance from Junction to Ambient	R <sub>θJA</sub>	50	°C/W
Thermal Resistance,Junction-to-Case	R <sub>θJC</sub>	1.7	°C/W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

### Electrical characteristics (T<sub>J</sub>=25 °C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-100			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -100V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.0	-1.8	-2.5	V
Drain-source on-resistance <sup>1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A		83	110	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -5A		95	120	
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V, f = 1MHz		1051		pF
Output Capacitance	C <sub>oss</sub>			119		
Reverse Transfer Capacitance	C <sub>rss</sub>			25		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -50V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -5A		20.1		nC
Gate-Source Charge	Q <sub>gs</sub>			3.9		
Gate-Drain Charge	Q <sub>gd</sub>			4.3		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -50V, V <sub>GS</sub> = -10V, R <sub>L</sub> = 2.5Ω R <sub>GEN</sub> = 6Ω		10		nS
Turn-on rise time	t <sub>r</sub>			30		
Turn-off delay time	t <sub>d(off)</sub>			77		
Turn-off fall time	t <sub>f</sub>			81		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current	I <sub>S</sub>				-18	A
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -10A			-1.3	V
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> = -5A		70		nS
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 100A/μs		140		nC

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

## Typical Characteristics

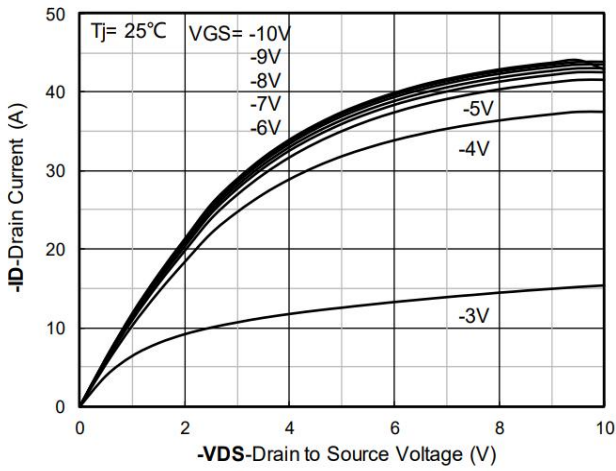


Figure1. Output Characteristics

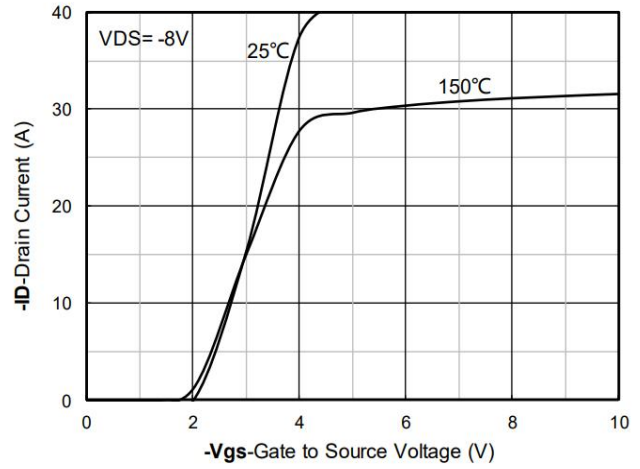


Figure2. Transfer Characteristics

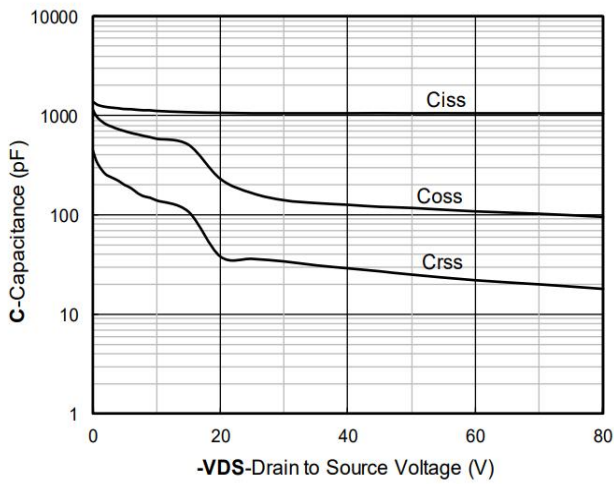


Figure3. Capacitance Characteristics

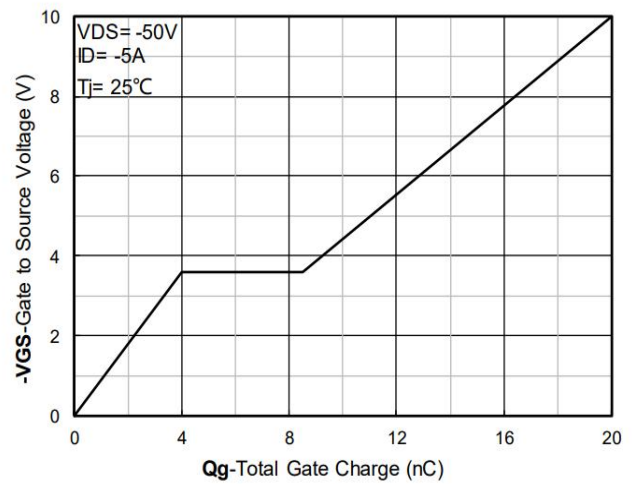


Figure4. Gate Charge

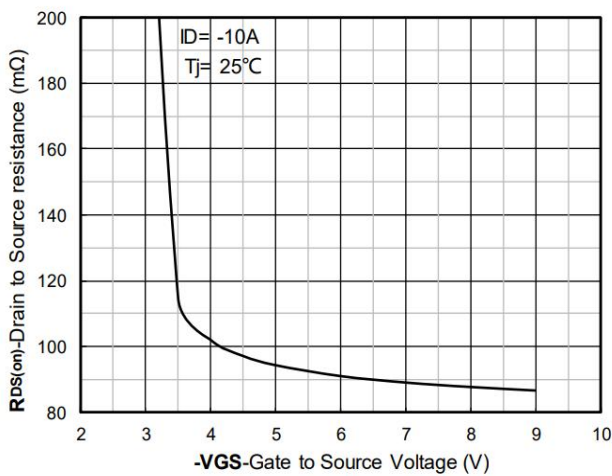


Figure5. On-Resistance vs Gate to Source Voltage

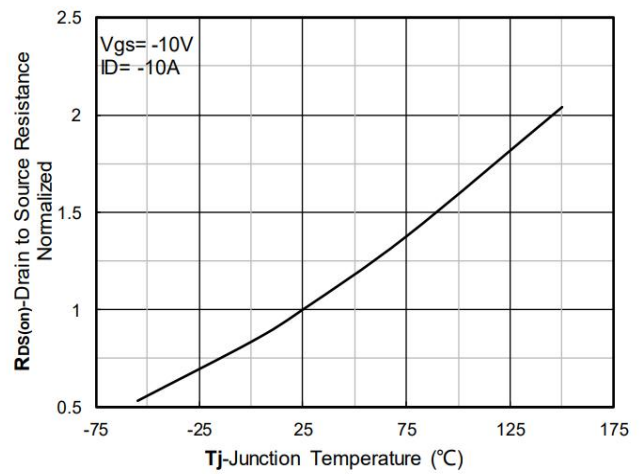


Figure6. Normalized On-Resistance

## Typical Characteristics

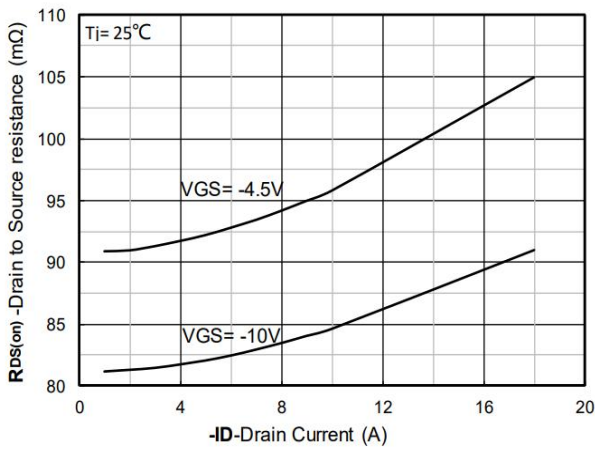


Figure 7. RDS(on) VS Drain Current

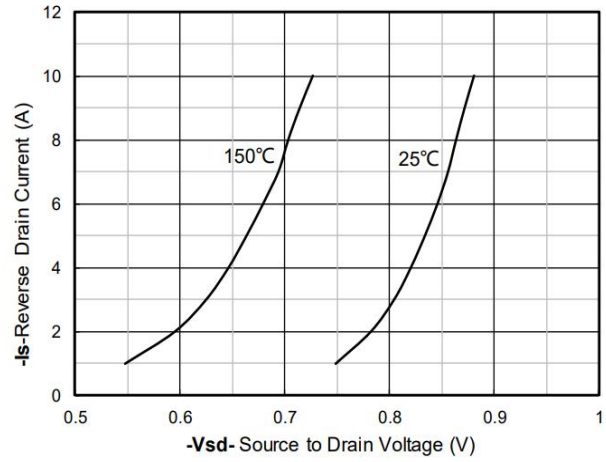


Figure 8. Forward characteristics of reverse diode

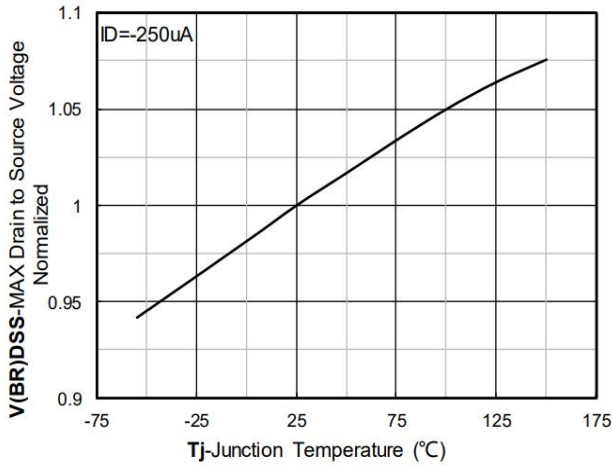


Figure 9. Normalized breakdown voltage

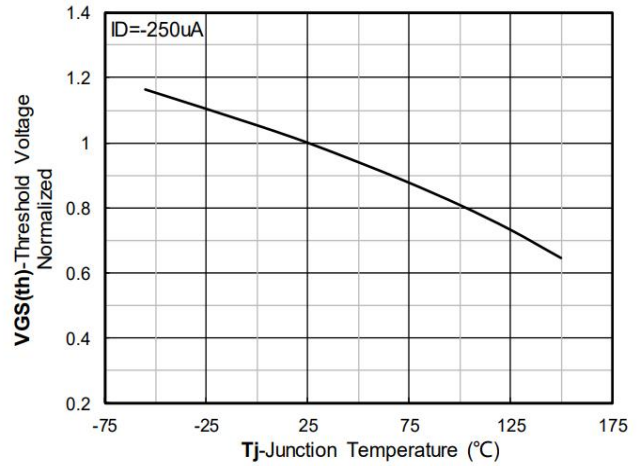


Figure 10. Normalized Threshold voltage

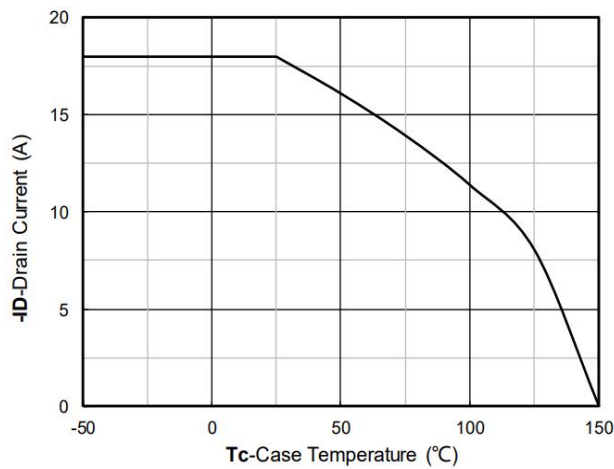


Figure 11. Current dissipation

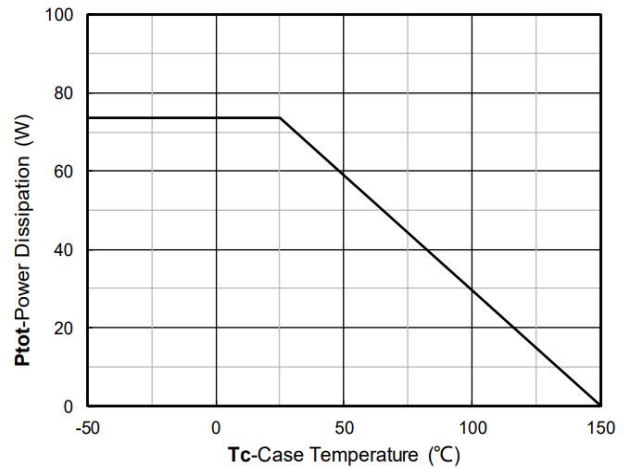


Figure 12. Power dissipation

## Typical Characteristics

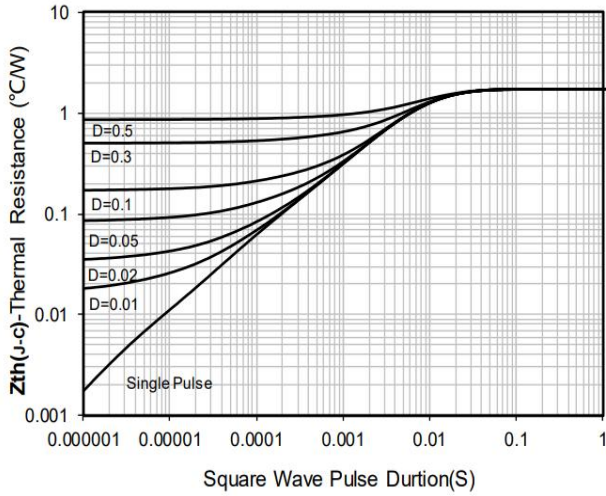


Figure13. Maximum Transient Thermal Impedance

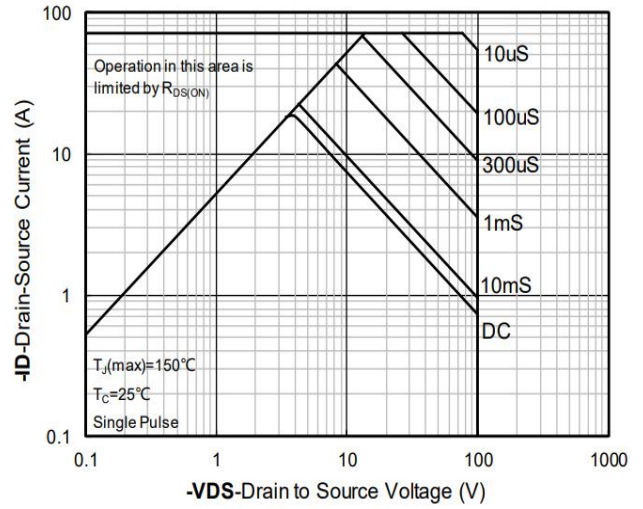
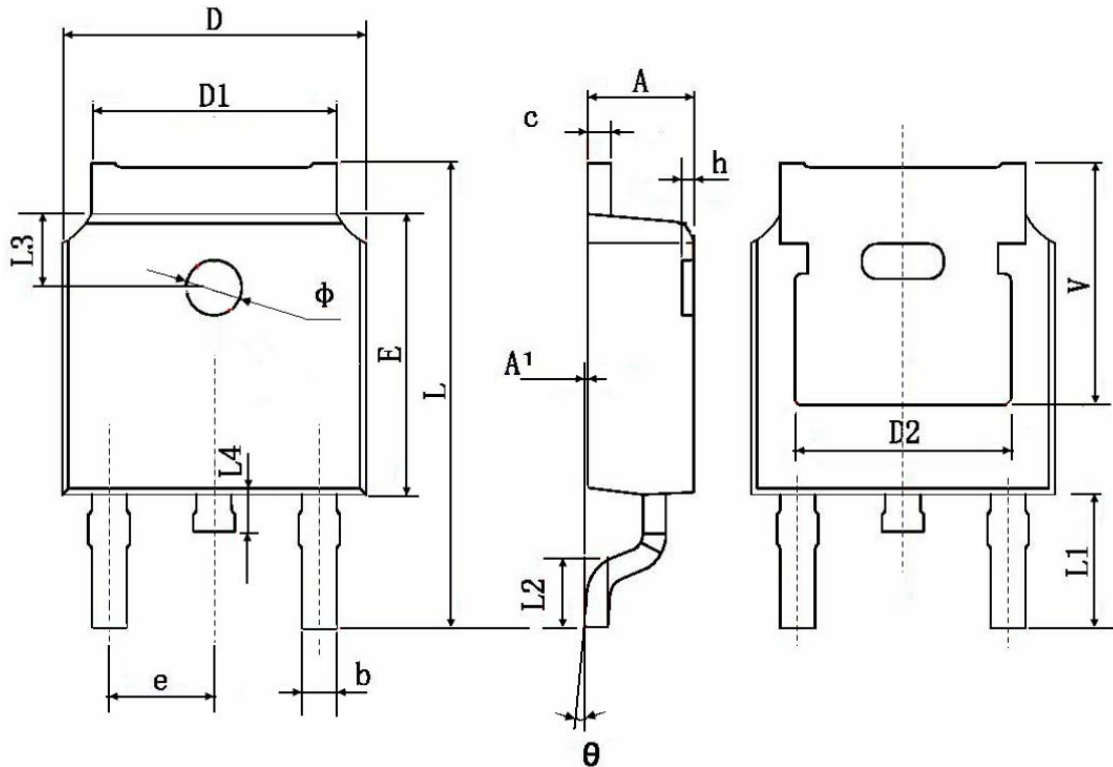


Figure14. Safe Operation Area

### 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	0.200	0.000	0.008
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	5.150	5.450	0.203	0.215
D2	4.600	4.950	0.181	0.195
E	6.000	6.200	0.236	0.244
e	2.286BSC		0.090BSC	
L	9.700	10.400	0.382	0.409
L1	2.900REF		0.114REF	
L2	1.250	1.750	0.049	0.069
L3	1.400	1.900	0.055	0.075
L4	0.600	1.000	0.024	0.039
V	5.150	5.450	0.203	0.215
$\theta$	0°	10°	0°	10°