

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	7.5mΩ@10V	80A
	9.5mΩ@4.5V	

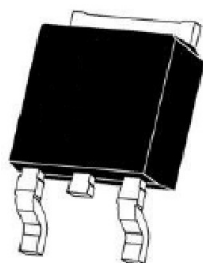
Feature

- High density cell design for low $R_{DS(on)}$
- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- Suffix "-Q1" for AEC-Q101

Application

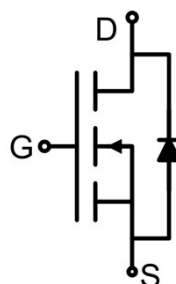
- DC-DC converter
- Power management functions
- Industrial and Motor Drive application

Package

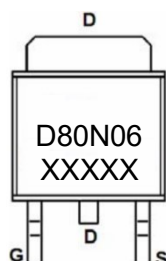


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	80	A
Continuous Drain Current (100°C)	$I_D (100^\circ\text{C})$	50	A
Pulsed Drain Current	I_{DM}	240	A
Power Dissipation	P_D	78	W
Thermal Resistance ,Junction-to-Ambient	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.6	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy	E_{AS}	150	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics (T_J=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	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, 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	1.2	1.7	2.5	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		5.5	7.5	mΩ
		V _{GS} =4.5V, I _D =10A		6.9	9.5	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =35V, V _{GS} =0V, f =1MHz		2000		pF
Output Capacitance	C _{oss}			390		
Reverse Transfer Capacitance	C _{rss}			13		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		34		nC
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			5.2		
Turn-on delay time	t _{d(on)}	V _{DD} =30V, V _{GS} =10V, I _D =12A R _{GEN} =3.0Ω		10		nS
Turn-on rise time	t _r			36		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			57		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				80	A
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =20A			1.3	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =20A di/dt = 100A/μs ¹⁾		27		nS
Reverse Recovery Charge	Q _{rr}			36		nC

Notes:

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

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

Typical Characteristics

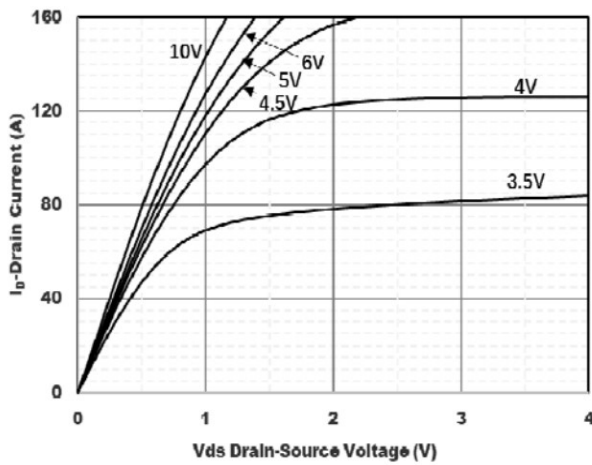


Figure1. Output Characteristics

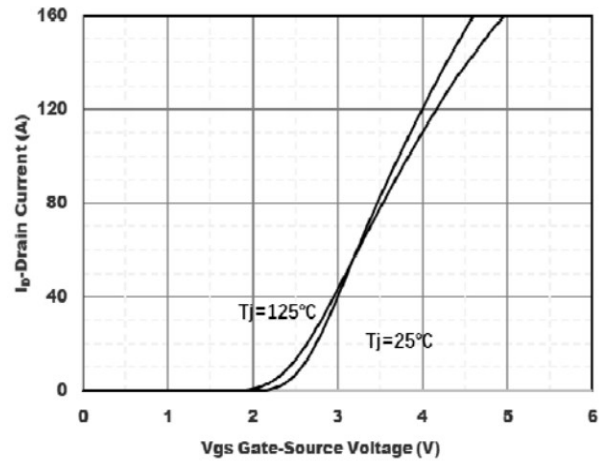


Figure2. Transfer Characteristics

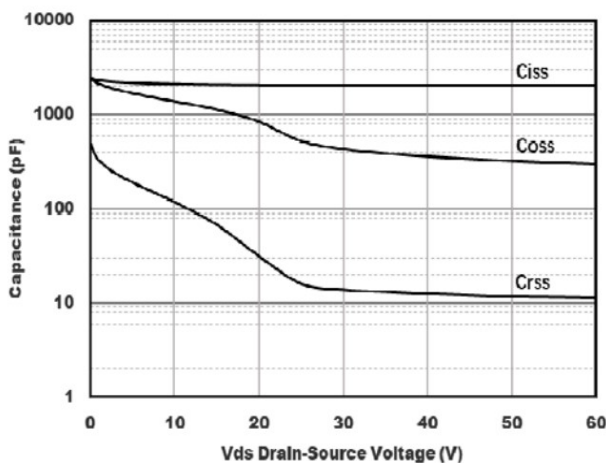


Figure3. Capacitance Characteristics

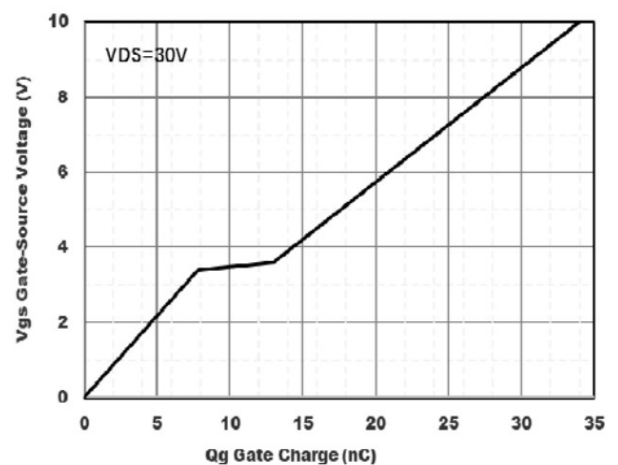


Figure4. Gate Charge

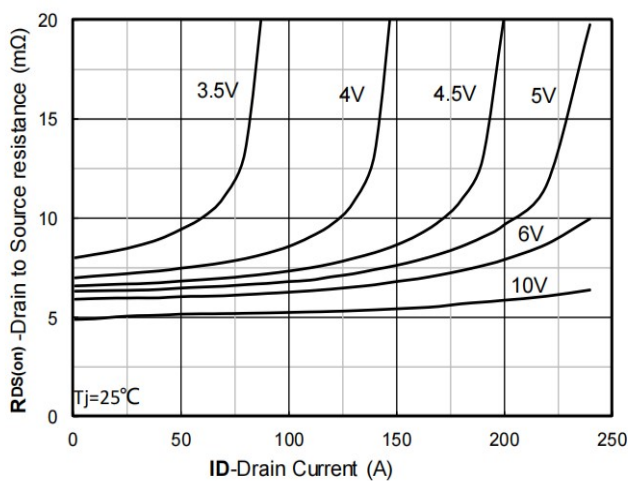


Figure5. Drain-Source on Resistance

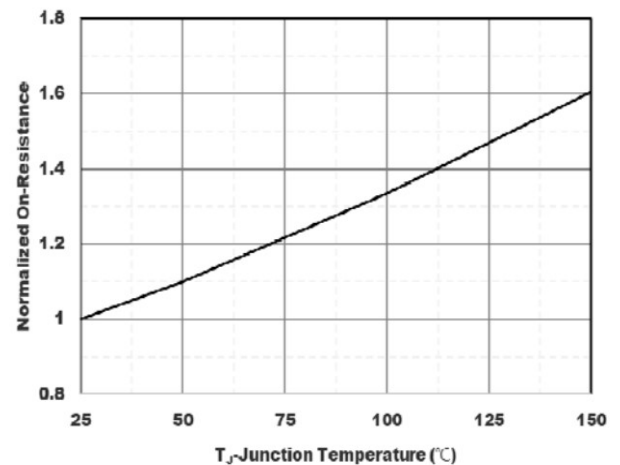


Figure6. Normalized On-Resistance

Typical Characteristics

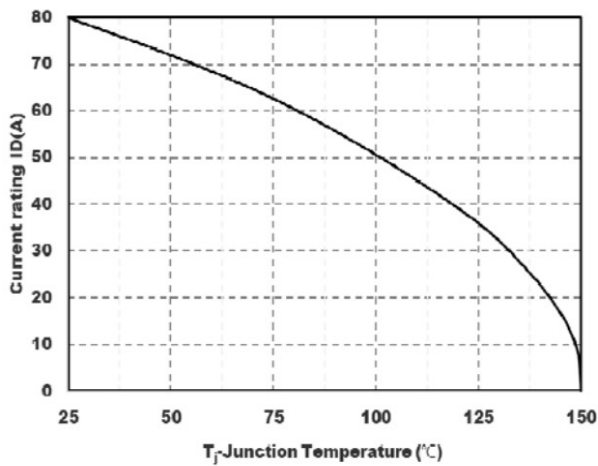


Figure7. Drain current

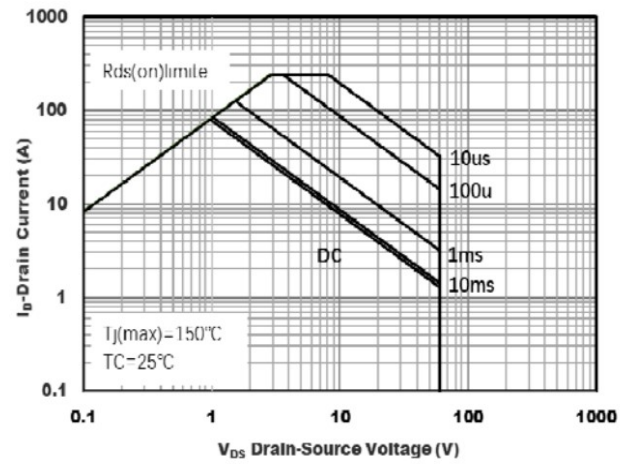


Figure8. Safe Operation Area

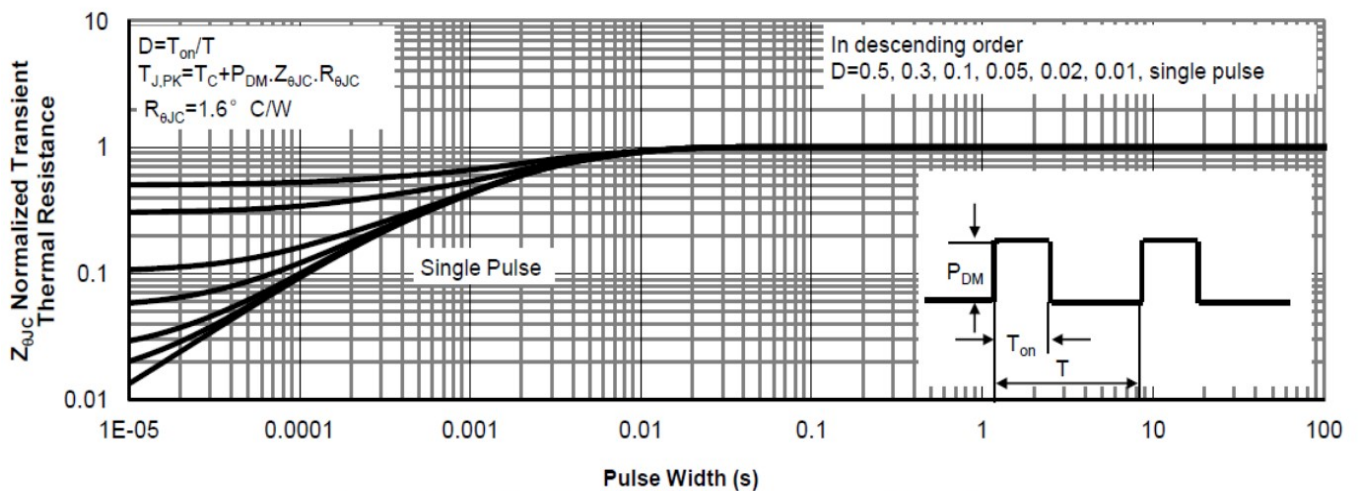
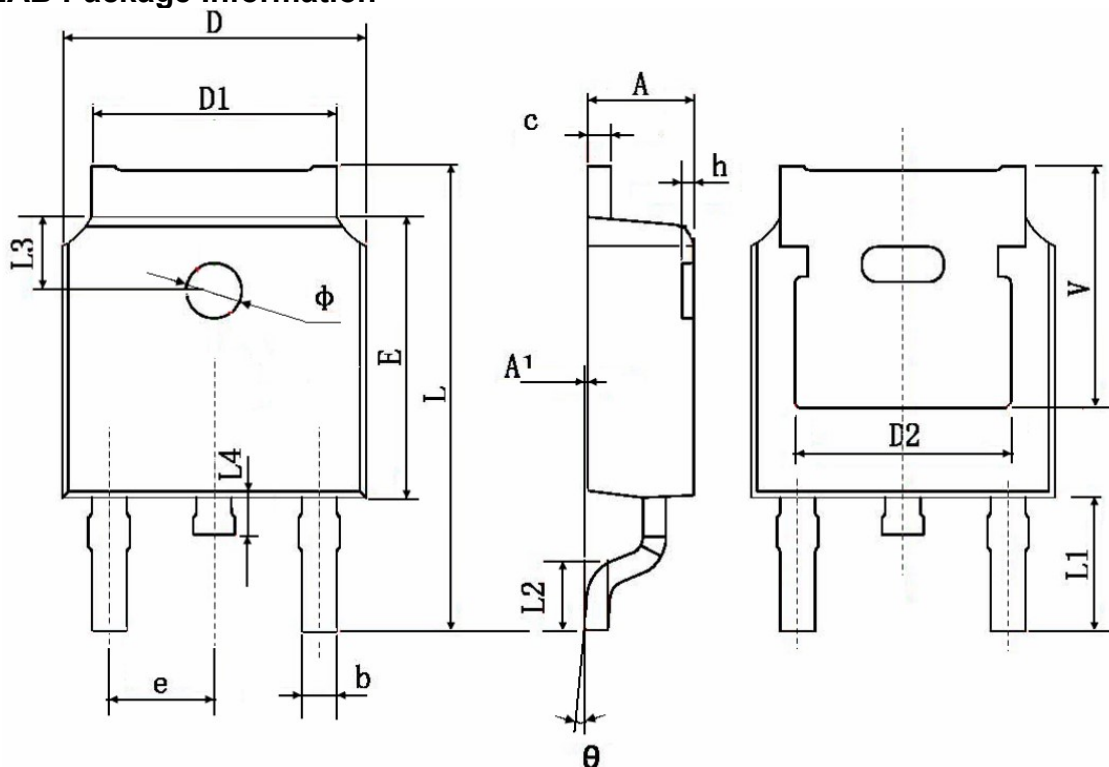


Figure8. Normalized Maximum Transient Thermal Impedance

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	0.200	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
θ	0°	10°	0°	10°