

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	19mΩ@10V	45A
	24mΩ@4.5V	

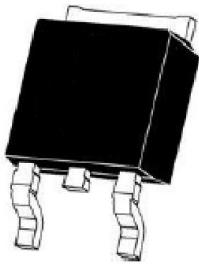
Feature

- Fast Switching
- Low Gate Charge and Rds on
- Advanced Split Gate Trench Technology
- Suffix "-Q1" for AEC-Q101

Application

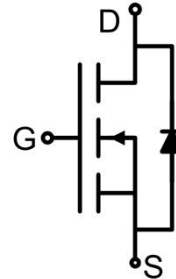
- Power switching application
- DC-DC Converter

Package

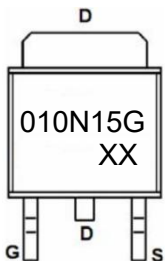


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (Ta=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	45	A
Pulsed Drain Current ²⁾	I _{DM}	180	A
Power Dissipation ⁴⁾ (T _C =25°C)	P _D	72	W
Thermal Resistance,Junction-to-Case ¹⁾	R _{θJC}	1.74	°C/W
Single pulse avalanche energy ³⁾	E _{AS}	110	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

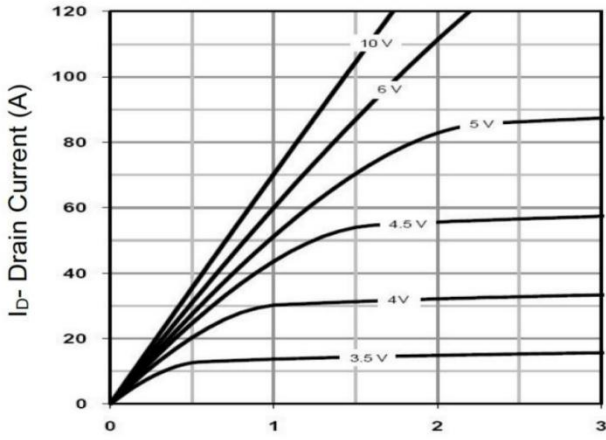
Electrical characteristics (Ta=25°C unless otherwise noted)

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} = 80V, V _{GS} = 0V			1.0	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	1.0		2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		15	19	mΩ
		V _{GS} = 4.5V, I _D = 10A		18	24	
Dynamic characteristics⁵⁾						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz		1871		pF
Output Capacitance	C _{oss}			161		
Reverse Transfer Capacitance	C _{rss}			19		
Total Gate Charge	Q _g	V _{DS} = 50V, V _{GS} = 10V, I _D = 20A		33.5		nC
Gate-Source Charge	Q _{gs}			6.9		
Gate-Drain Charge	Q _{gd}			5.1		
Turn-on delay time	t _{d(on)}	V _{DD} = 50V, V _{GS} = 10V, I _D = 20A, R _G = 3Ω		15		nS
Turn-on rise time	t _r			18		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			9		
Source-Drain Diode characteristics						
Diode Forward voltage ²⁾	V _{DS}	V _{GS} = 0V, I _S = 1A			1.2	V

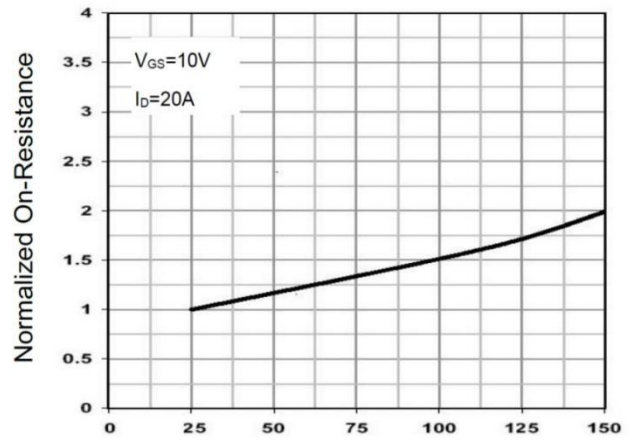
Notes:

- 1) The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2) The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- 3) The EAS data shows Max. rating . The test condition is VDD=50V,VGS=10V,L=0.5mH.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Dynamic characteristics Guaranteed by design, not subject to production testing.

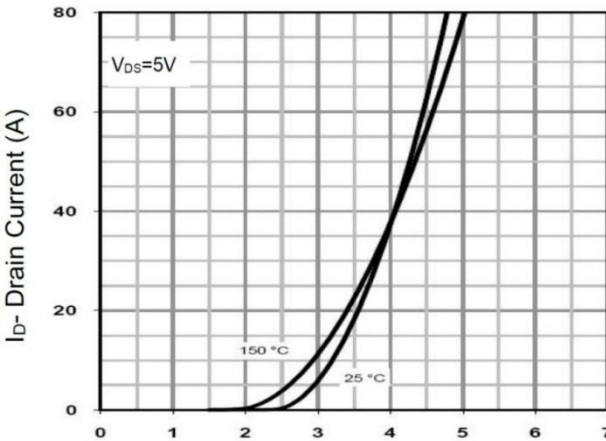
Typical Characteristics



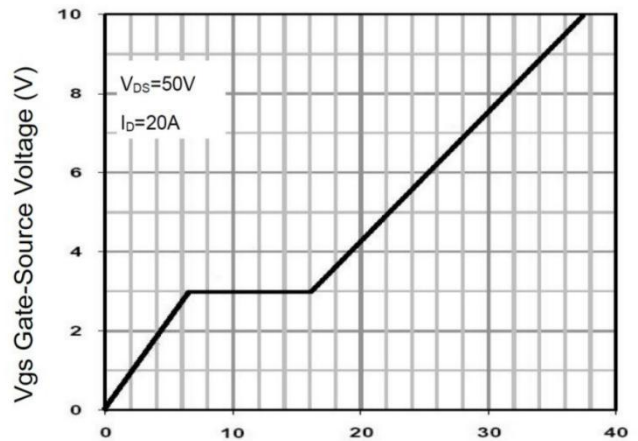
Vds Drain-Source Voltage (V)
Output Characteristics



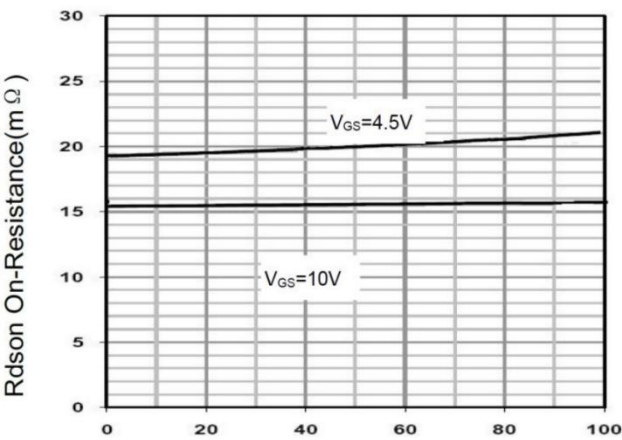
T_J-Junction Temperature(°C)
Rdson-Junction Temperature



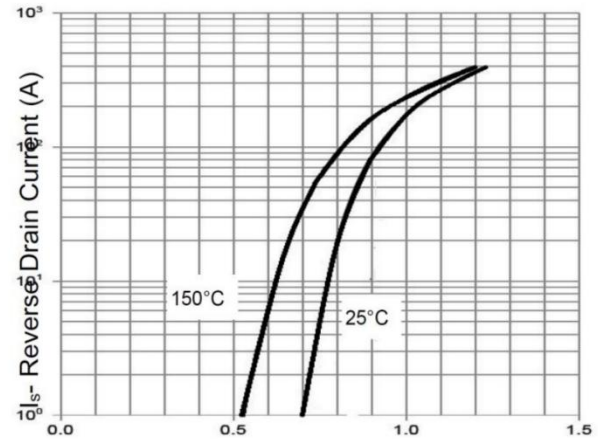
Vgs Gate-Source Voltage (V)
Transfer Characteristics



Qg Gate Charge (nC)
Gate Charge

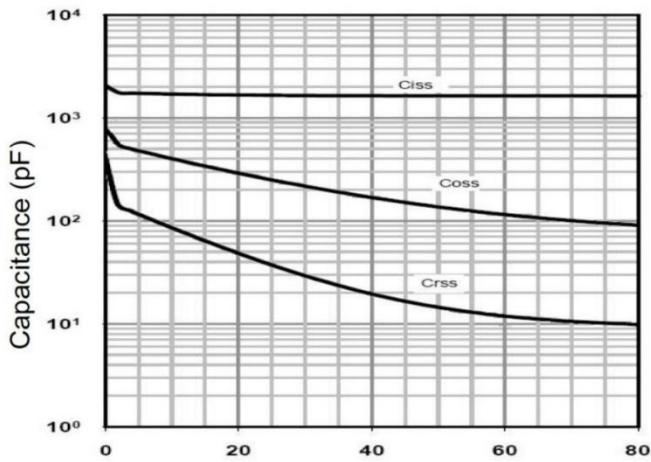


I_D- Drain Current (A)
Rdson- Drain Current

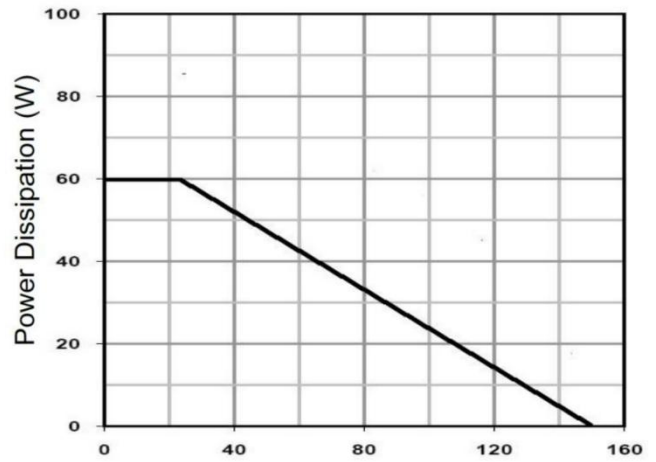


Vsd Source-Drain Voltage (V)
Source- Drain Diode Forward

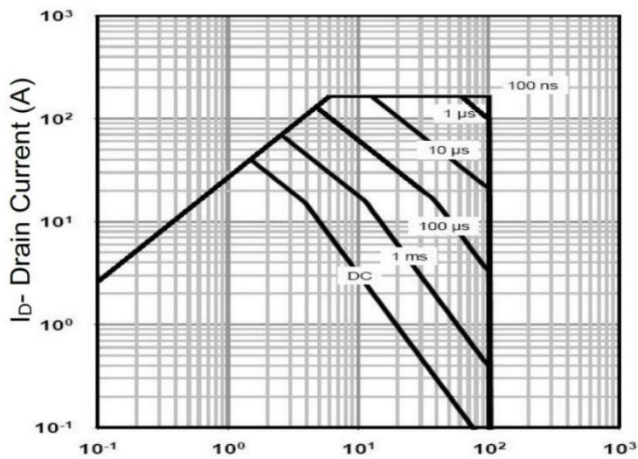
Typical Characteristics



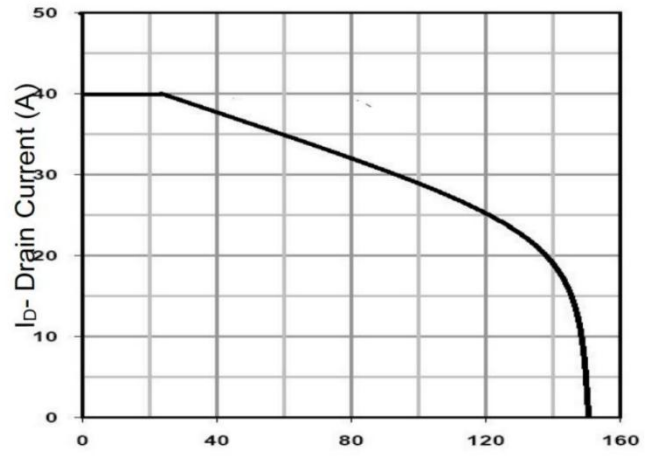
V_{ds} Drain-Source Voltage (V)
Capacitance vs V_{ds}



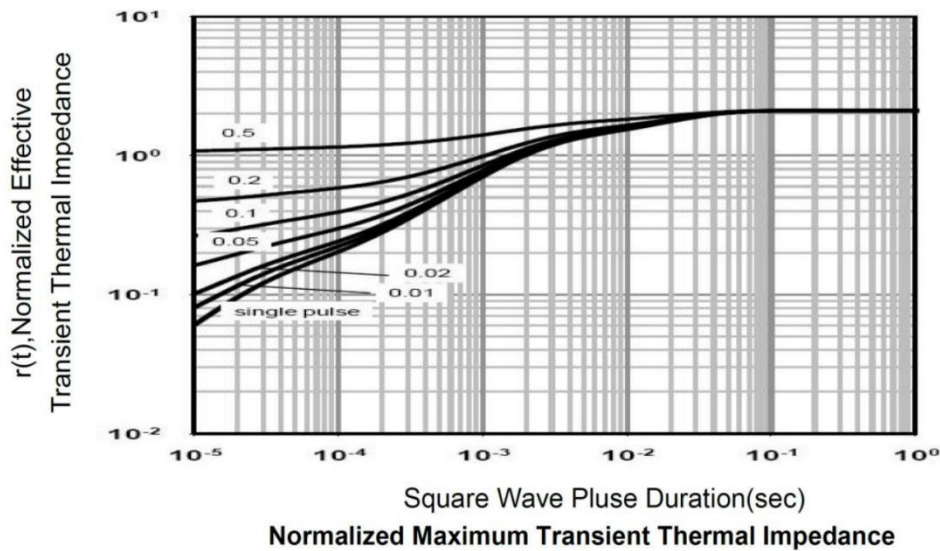
T_A-Junction Temperature(°C)
Power De-rating



V_{ds} Drain-Source Voltage (V)
Safe Operation Area

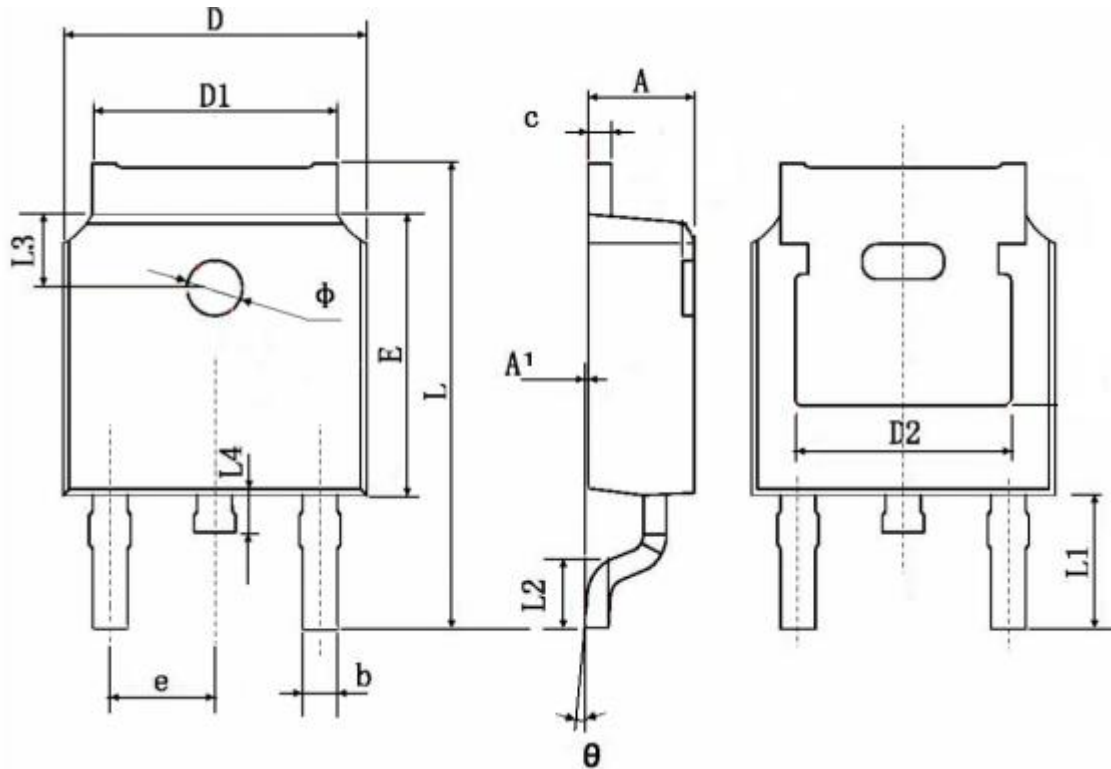


T_A-Junction Temperature (°C)
Current De-rating



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	0.130	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.500	0.201	0.217
D2	4.830 REF		0.190 REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 REF		0.114 REF	
L2	1.400	1.800	0.055	0.070
L3	1.600 REF		0.063 REF	
L4	0.600	1.000	0.024	0.039
ϕ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°