

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	3.2mΩ@10V	180A
	4.3mΩ@4.5V	

Feature

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

Application

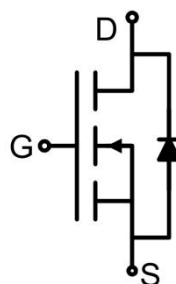
- DC-DC Converters
- Power Management

Package

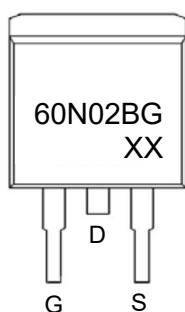


TO-263AB

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 ¹⁾ (T _C =25°C)	I _D	180	A
Pulsed Drain Current ²⁾	I _{DM}	720	A
Power Dissipation ⁴⁾ (T _C =25°C)	P _D	210	W
Thermal Resistance from Junction to Case ¹⁾	R _{θJC}	0.59	°C/W
Single pulse avalanche energy ³⁾	E _{AS}	961	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

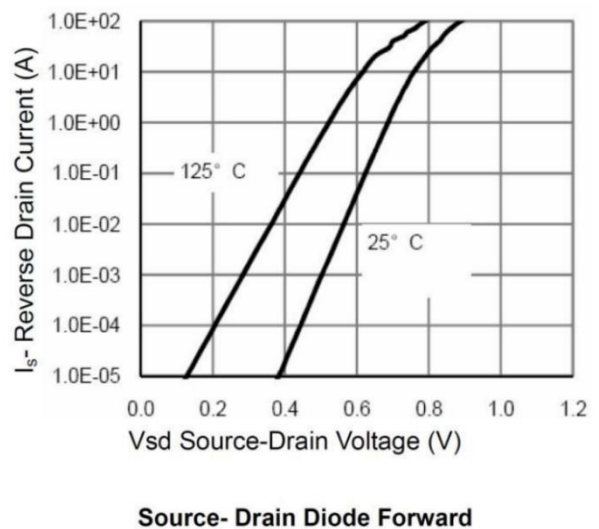
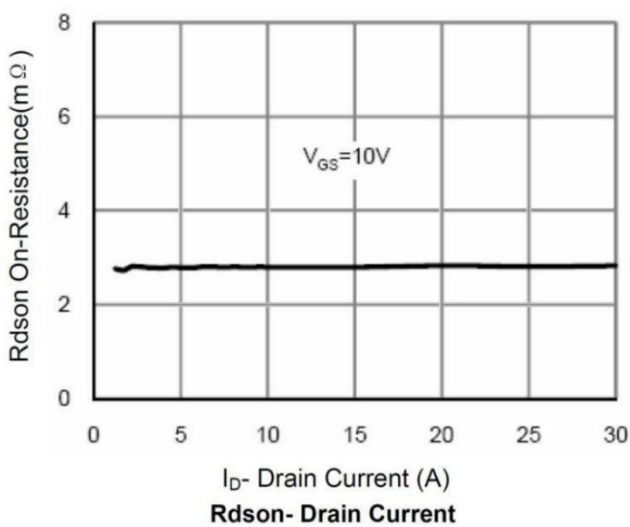
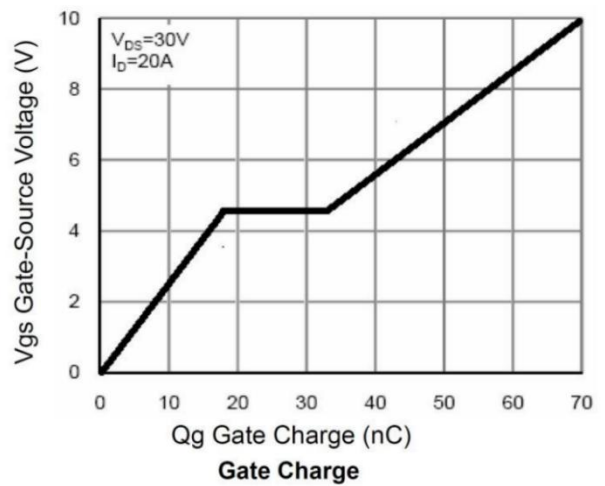
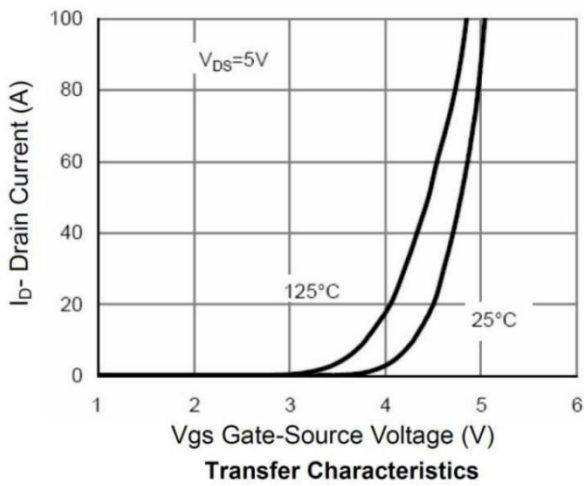
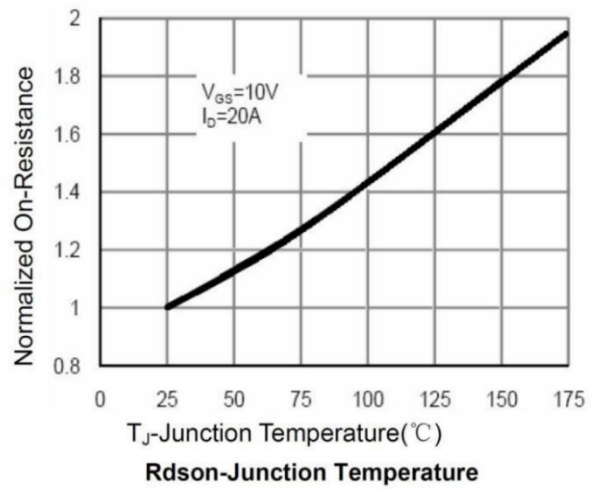
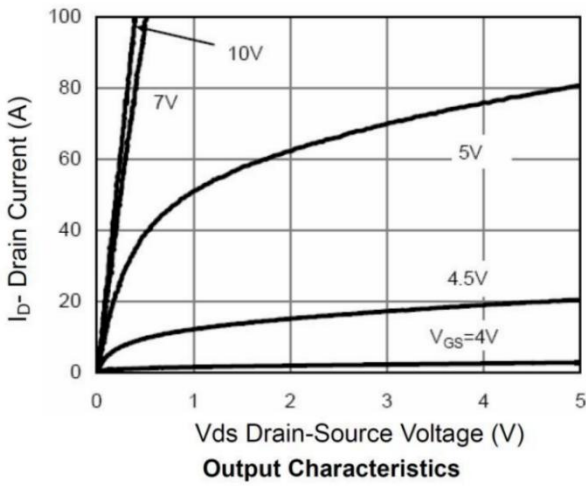
Electrical characteristics (Ta=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 48V, 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	1.0	1.7	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		2.6	3.2	mΩ
		V _{GS} = 4.5V, I _D = 20A		3.5	4.3	
Dynamic characteristics⁵⁾						
Input Capacitance	C _{iss}	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz		4250		pF
Output Capacitance	C _{oss}			975		
Reverse Transfer Capacitance	C _{rss}			41		
Total Gate Charge	Q _g	V _{DS} = 30V, V _{GS} = 10V, I _D = 20A		68		nC
Gate-Source Charge	Q _{gs}			19		
Gate-Drain Charge	Q _{gd}			14		
Turn-on delay time	t _{d(on)}	V _{DD} = 30V, V _{GS} = 10V, I _D = 20A, R _{GEN} = 4.7Ω		6		nS
Turn-on rise time	t _r			12		
Turn-off delay time	t _{d(off)}			24		
Turn-off fall time	t _f			5		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = 1A			1.2	V

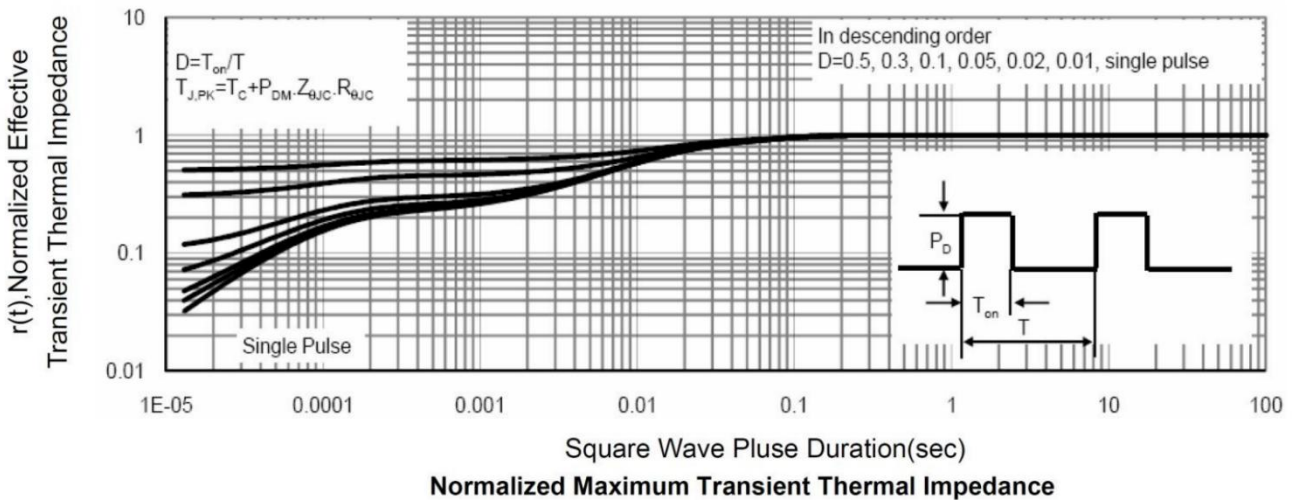
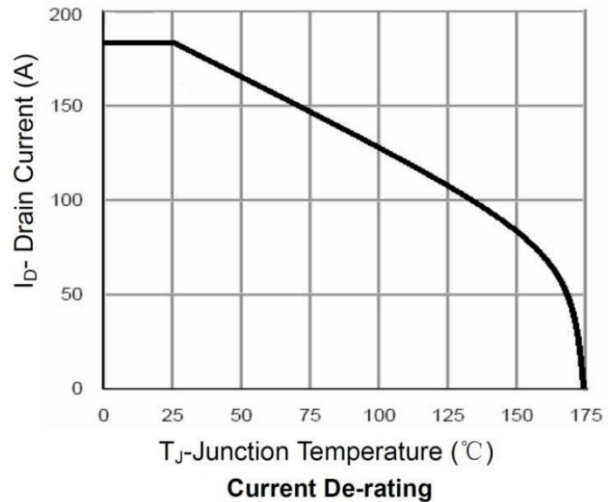
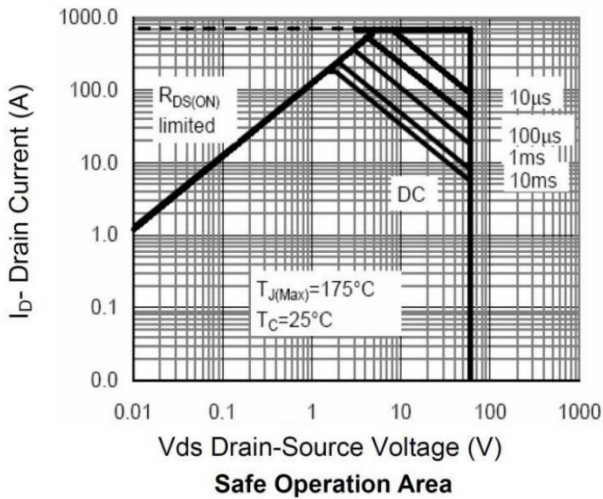
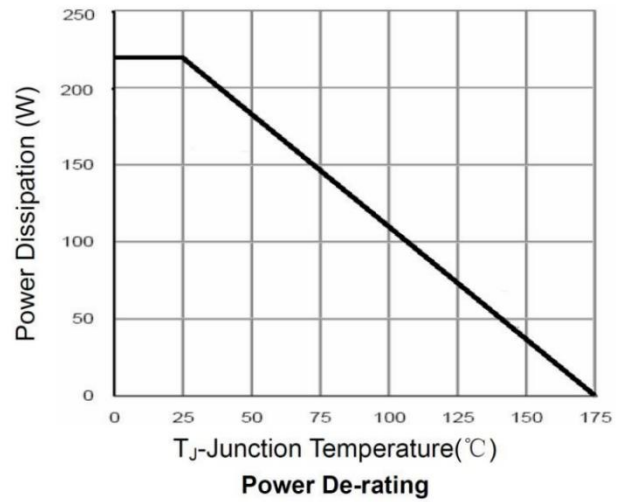
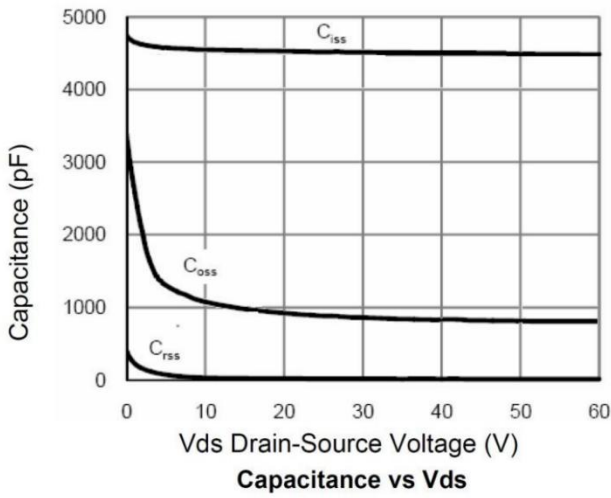
Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
- 3) The EAS data shows Max. rating. The test condition is V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_G=25Ω.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production.

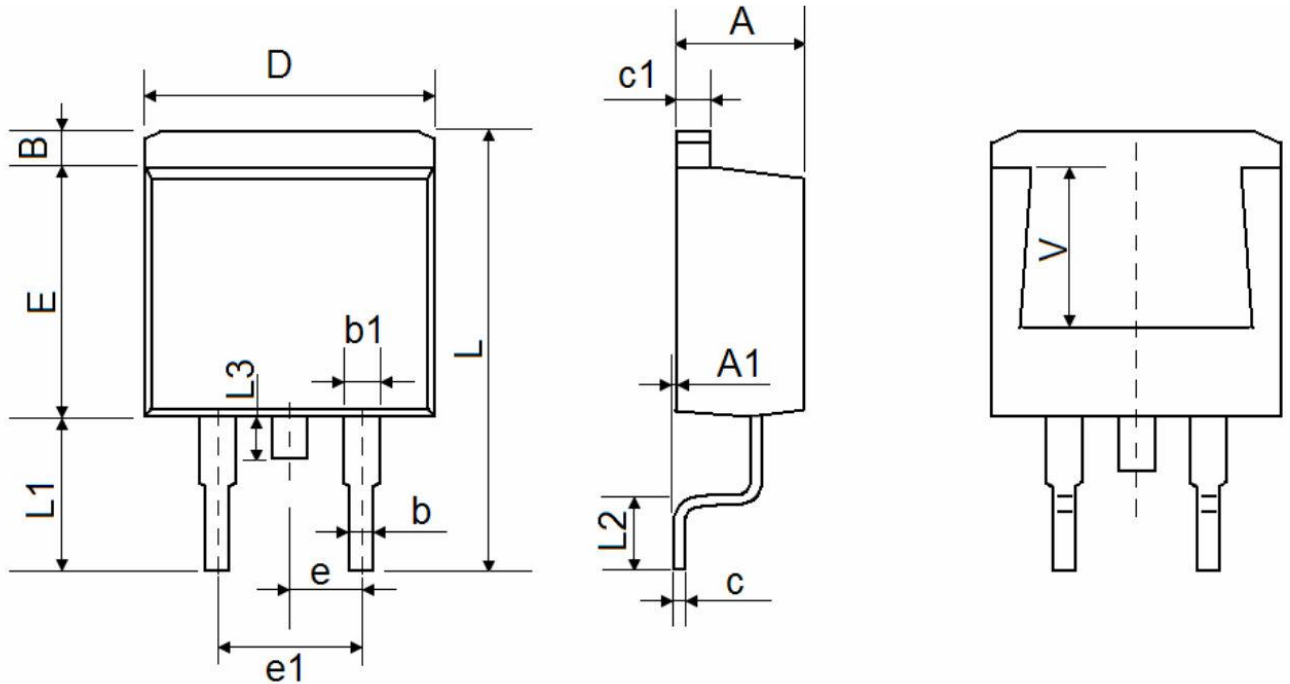
Typical Characteristics



Typical Characteristics



TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.480	0.195	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
V	5.600 REF.		0.220 REF.	