

### 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

### Application

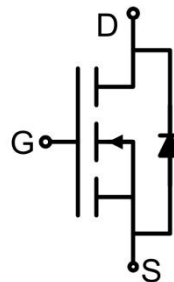
- DC-DC Converters
- Power Management

### Package

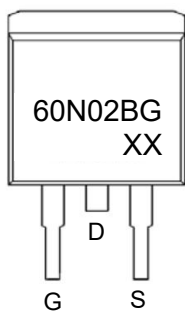


TO-263AB

### 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 <sup>1)</sup> ( $T_C=25^\circ\text{C}$ )	$I_D$	180	A
Pulsed Drain Current <sup>2)</sup>	$I_{DM}$	720	A
Power Dissipation <sup>4)</sup> ( $T_C=25^\circ\text{C}$ )	$P_D$	210	W
Thermal Resistance from Junction to Case <sup>1)</sup>	$R_{\theta JC}$	0.59	$^\circ\text{C/W}$
Single pulse avalanche energy <sup>3)</sup>	$E_{AS}$	961	mJ
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

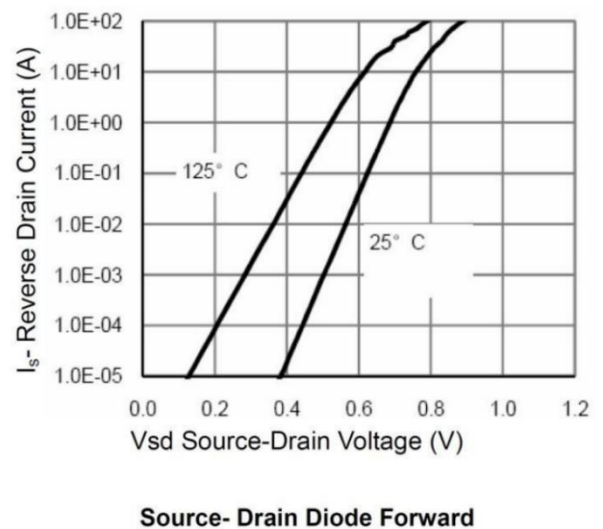
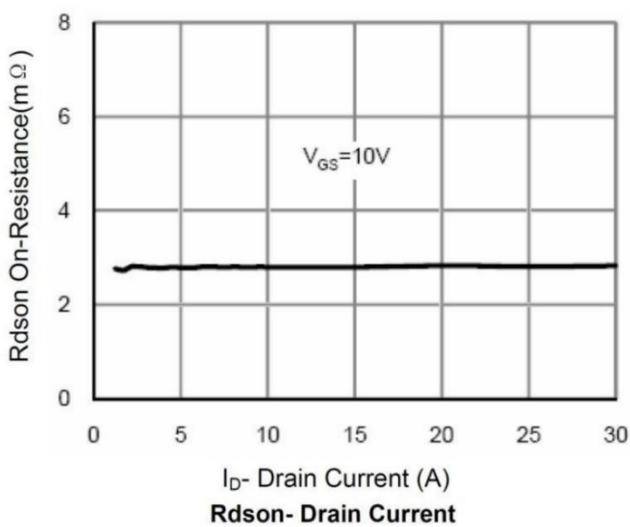
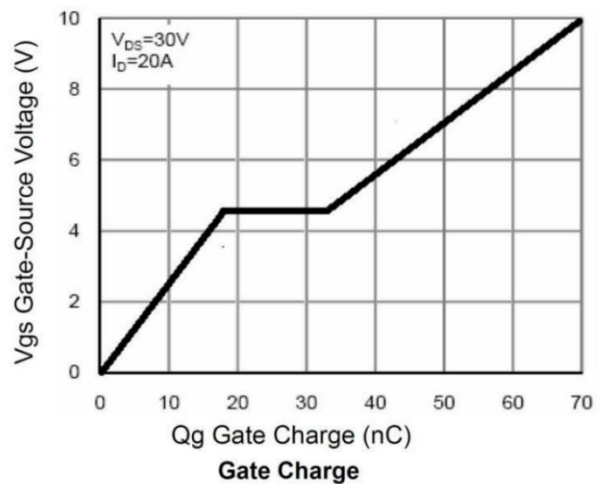
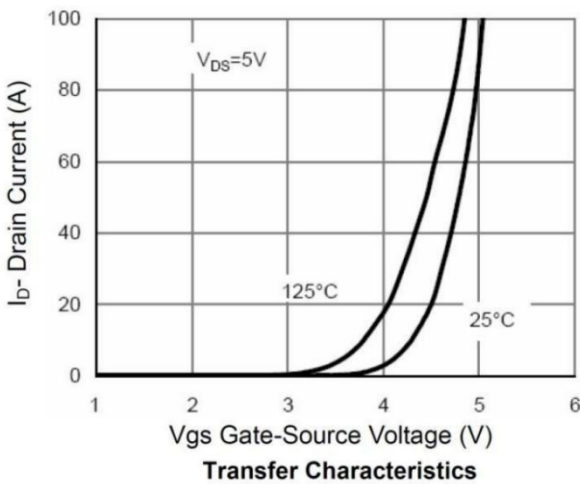
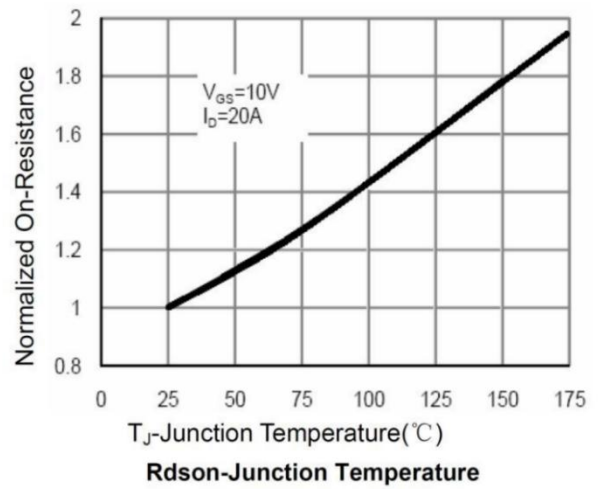
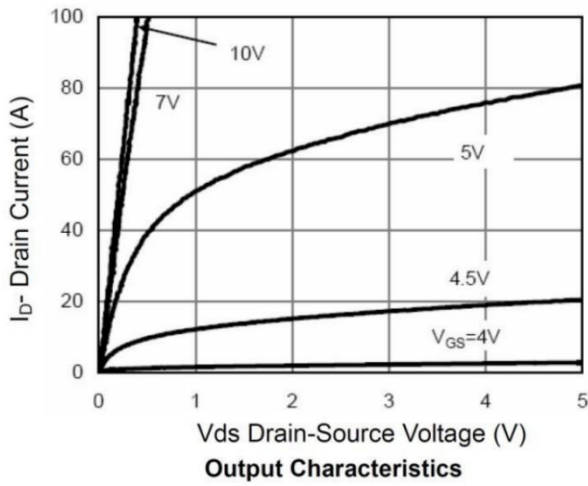
### Electrical characteristics (Ta=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	60			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 48V, V_{GS} = 0V$			1	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.0	1.7	2.5	V
Drain-source on-resistance <sup>2)</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		2.6	3.2	m $\Omega$
		$V_{GS} = 4.5V, I_D = 20A$		3.5	4.3	
<b>Dynamic characteristics<sup>5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 30V, V_{GS} = 0V, f = 1\text{MHz}$		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	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 20A, R_{GEN} = 4.7\Omega$		6		nS
Turn-on rise time	$t_r$			12		
Turn-off delay time	$t_{d(off)}$			24		
Turn-off fall time	$t_f$			5		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	$V_{DS}$	$V_{GS} = 0V, I_S = 1A$			1.2	V

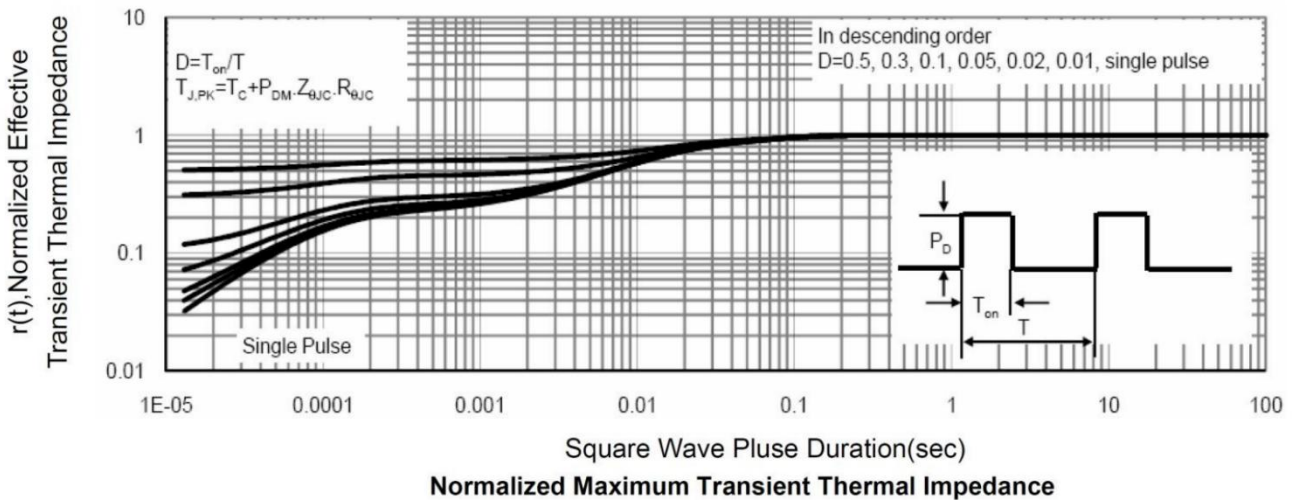
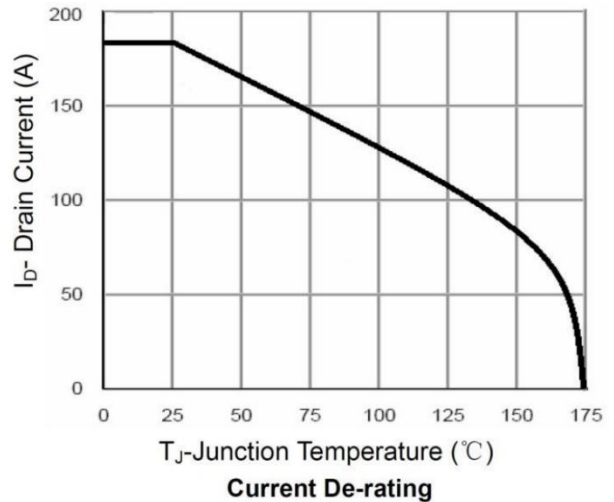
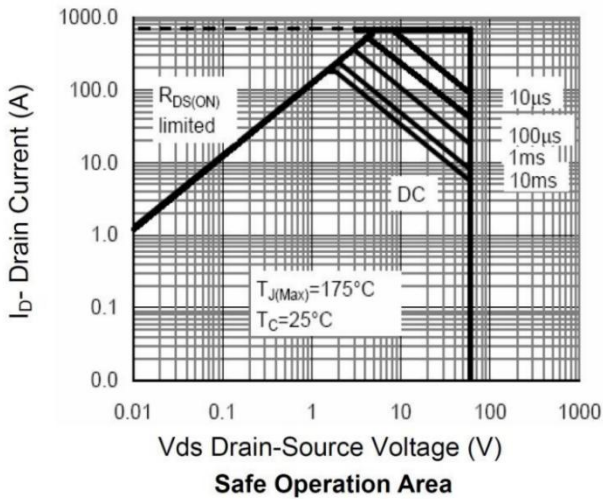
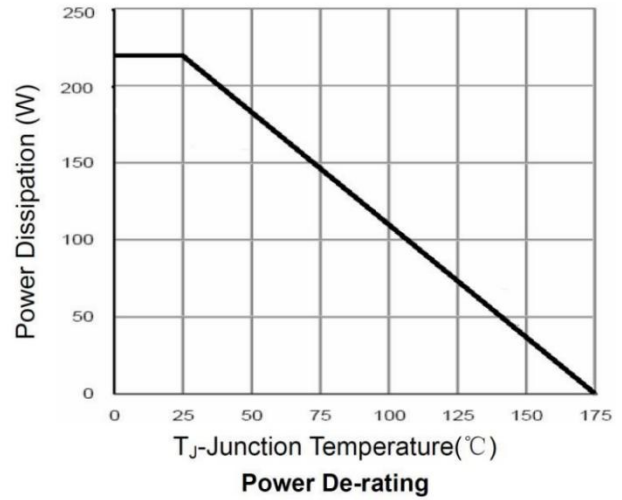
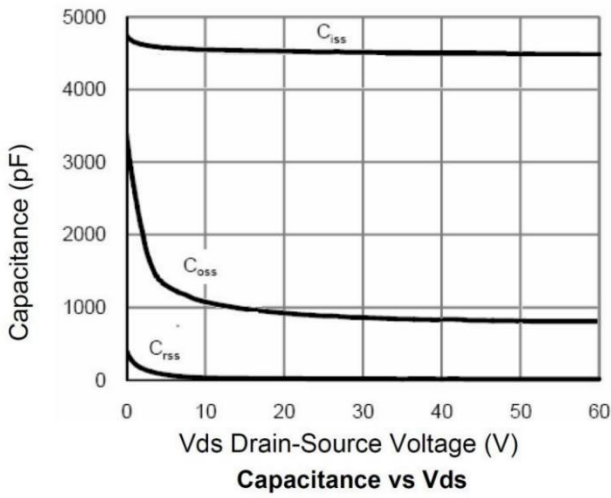
Notes:

- 1) The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2) The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
- 3) The EAS data shows Max. rating. The test condition is  $V_{DD} = 30V, V_{GS} = 10V, L = 0.5\text{mH}, R_G = 25\Omega$ .
- 4) The power dissipation is limited by 150 $^\circ\text{C}$  junction temperature.
- 5) Guaranteed by design, not subject to production.

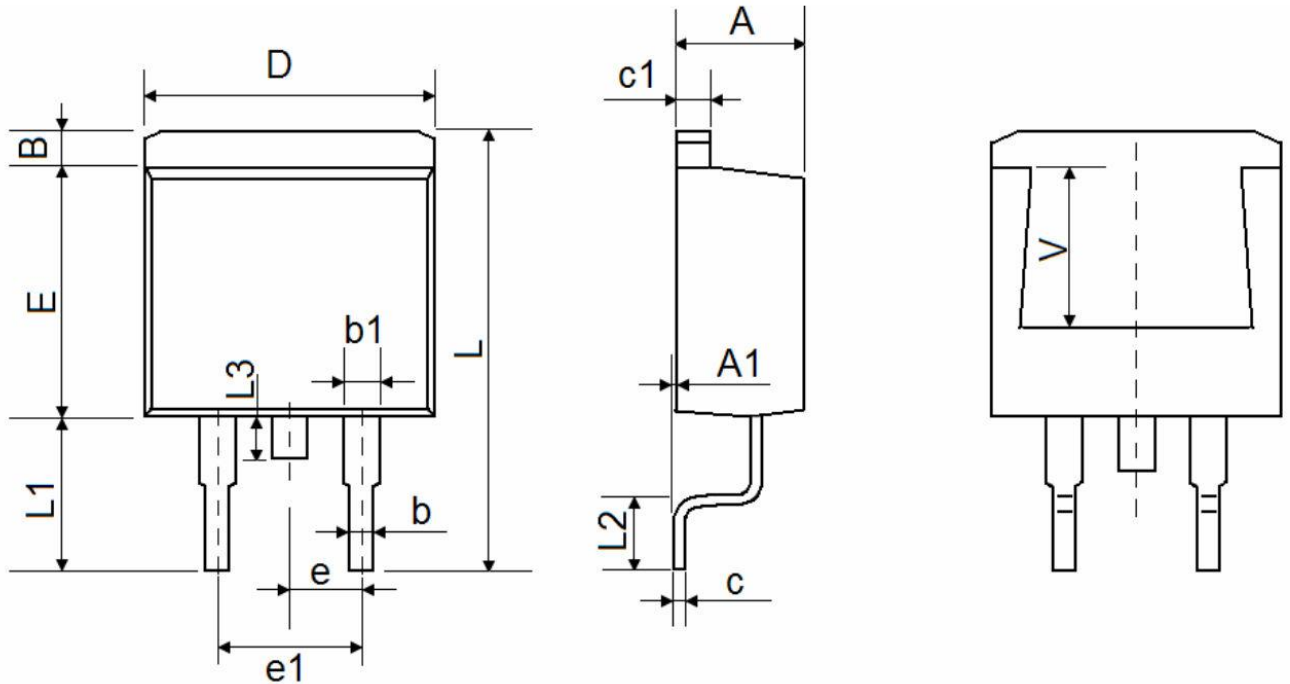
## Typical Characteristics



## 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.	