

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
250V	23mΩ@10V	60A

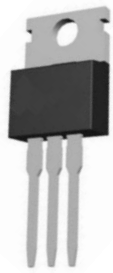
### Feature

- Fast Switching
- Low Gate Charge and R<sub>DS(on)</sub>

### Application

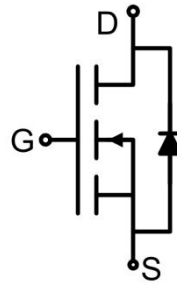
- Power switching application
- DC-DC Converter
- Power Management

### Package

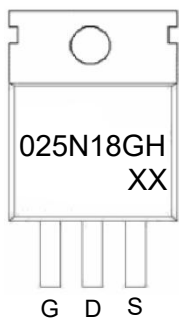


TO-220AB

### Circuit diagram



### Marking



### Absolute maximum ratings ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	250	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current( $T_C=25^\circ\text{C}$ )	$I_D$	60	A
Pulsed Drain Current	$I_{DM}$	240	A
Power Dissipation( $T_C=25^\circ\text{C}$ )	$P_D$	390	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.32	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy <sup>1)</sup>	$E_{AS}$	972	mJ
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

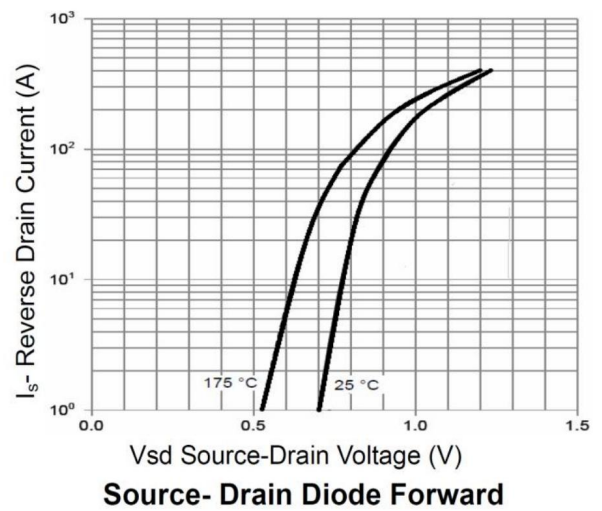
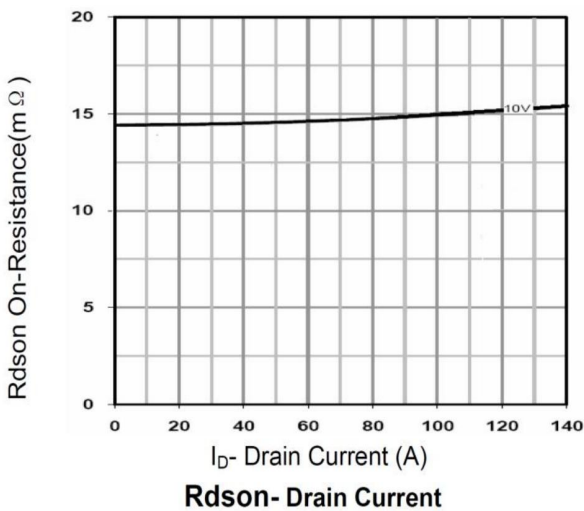
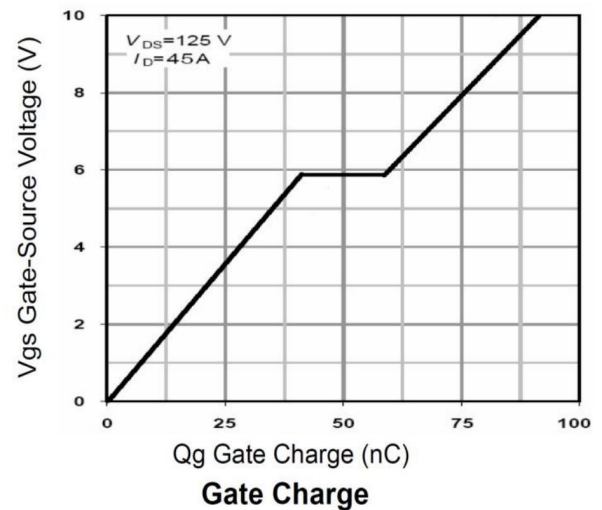
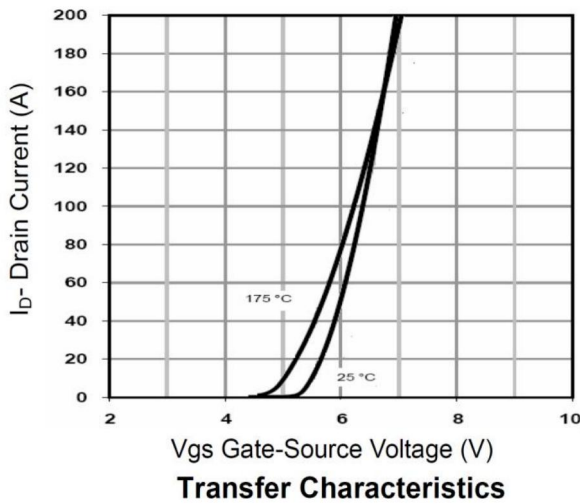
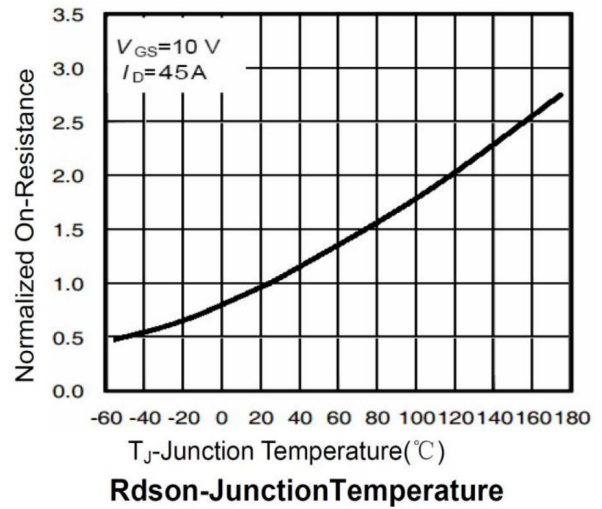
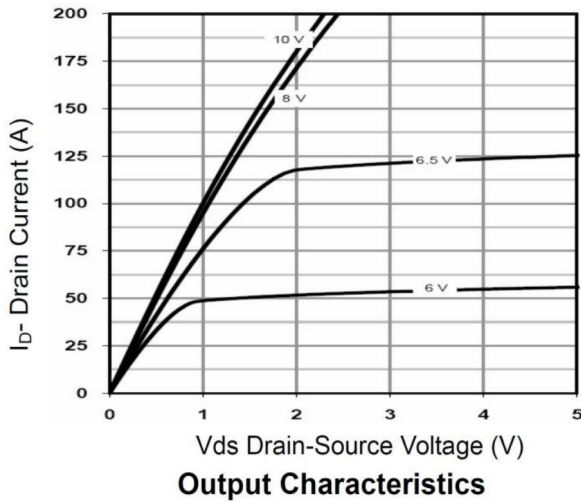
### Electrical characteristics ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	250			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 200V, V_{GS} = 0V$			1	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	3.0	3.5	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		18	23	m $\Omega$
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0\text{MHz}$		5500		pF
Output Capacitance	$C_{oss}$			903		
Reverse Transfer Capacitance	$C_{rss}$			4.6		
Total Gate Charge	$Q_g$	$V_{DS} = 125V, V_{GS} = 10V, I_D = 40A$		80		nC
Gate-Source Charge	$Q_{gs}$			28		
Gate-Drain Charge	$Q_{gd}$			26		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 125V, V_{GS} = 10V,$ $R_G = 5\Omega, I_D = 40A$		33		nS
Turn-on rise time	$t_r$			15		
Turn-off delay time	$t_{d(off)}$			61		
Turn-off fall time	$t_f$			8		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 1A$			1.2	V

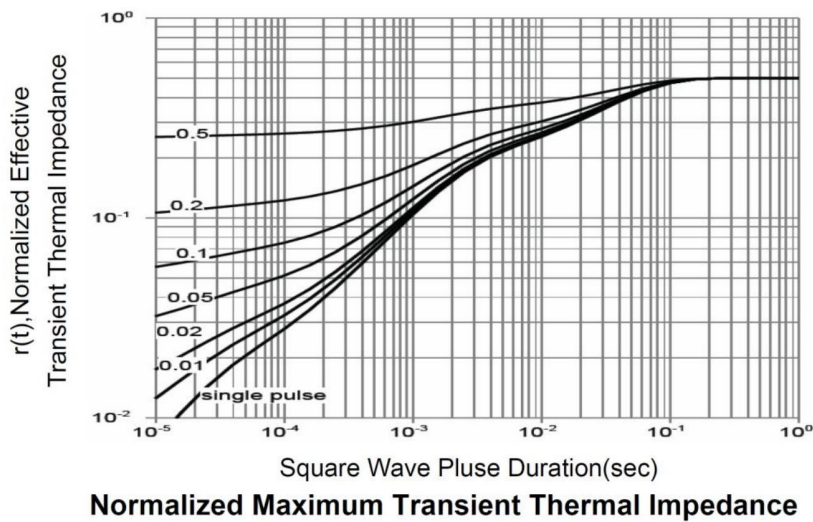
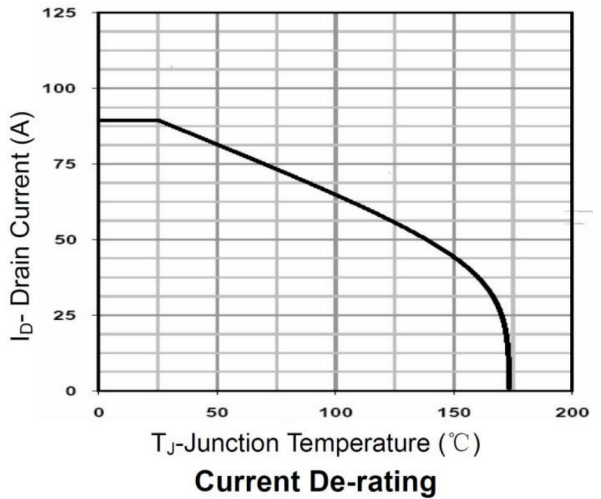
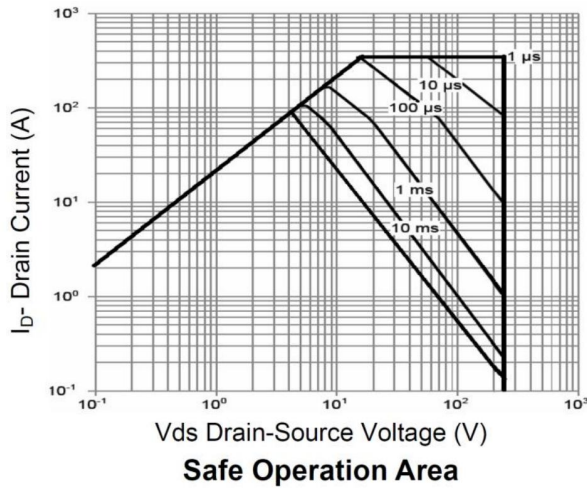
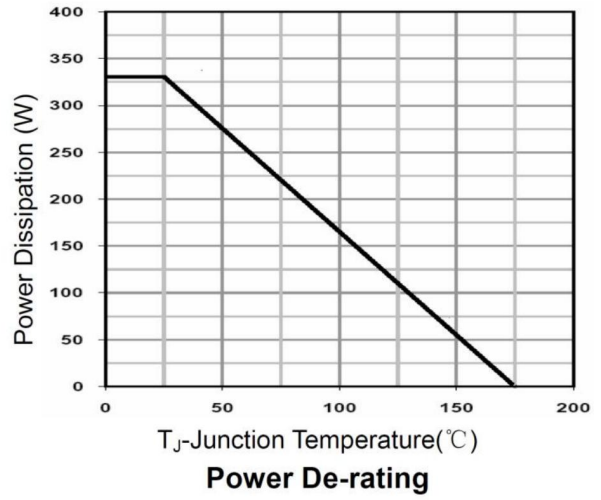
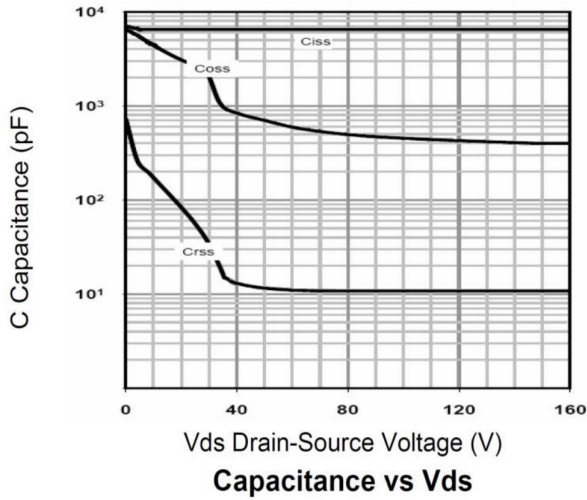
Notes:

- 1) EAS is tested at starting  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 75V, V_{GS} = 10V, L = 0.5\text{mH}, R_g = 25\text{m}\Omega$ ;
- 2) Guaranteed by design, not subject to production.

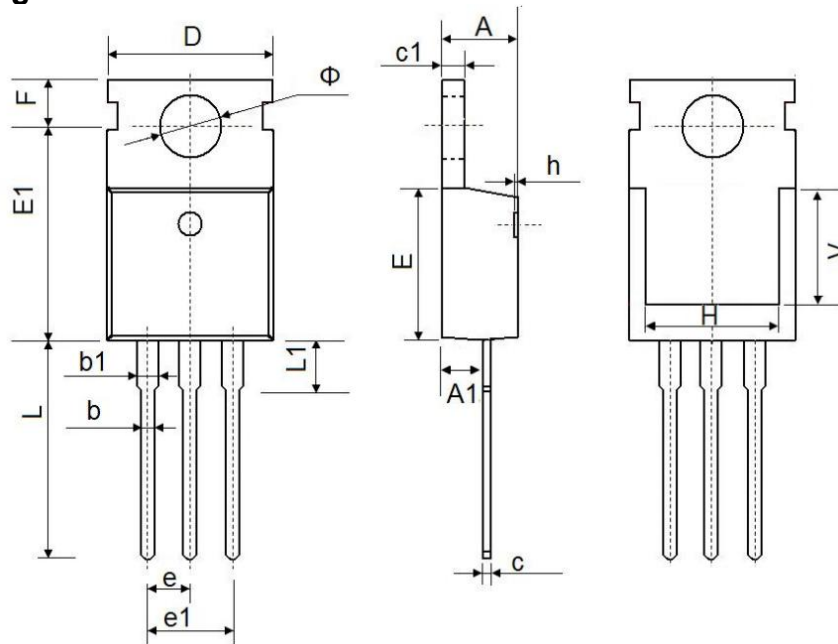
## Typical Characteristics



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### TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF		0.276 REF	
φ	3.400	3.800	0.134	0.150