AG045SN100MTA

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	17mΩ@10V	45A
	21mΩ@4.5V	

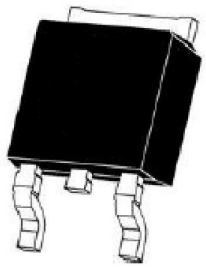
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench technology

Application

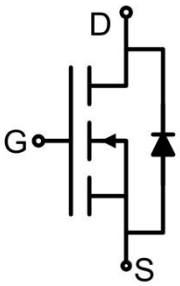
- Power switching application
- Battery management
- Uninterruptible power supply

Package

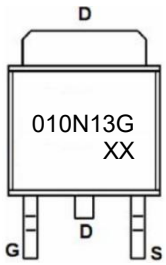


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	45	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	30	A
Pulsed Drain Current	I_{DM}	180	A
Single Pulse Avalanche Energy[1)]	E_{AS}	144	mJ
Power Dissipation (T_C=25℃)	P_D	75	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.67	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃ unless otherwise noted)

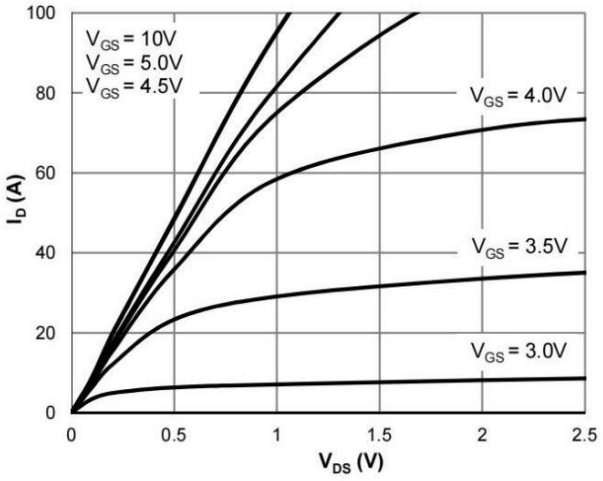
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =250μA	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =80V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.8	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		13	17	mΩ
		V_{GS} =4.5V, I_D =10A		16	21	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz		1062		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			14		
Total Gate Charge	Q_g	V_{DS} =50V, V_{GS} =10V, I_D =20A		12		nC
Gate-Source Charge	Q_{gs}			4.3		
Gate-Drain Charge	Q_{gd}			2.3		
Turn-on delay time	$t_{d(on)}$	V_{DS} =50V, V_{GS} =10V, I_D =20A R_G =2.2Ω		33		nS
Turn-on rise time	t_r			10.4		
Turn-off delay time	$t_{d(off)}$			44		
Turn-off fall time	t_f			14.7		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				45	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =1A, T_J =25℃			1.2	V
Reverse Recovery Time	T_{rr}	I_S =20A, di/dt =100A/μs T_J =25℃		40		nS
Reverse Recovery Charge	Q_{rr}			42		nC

Notes:

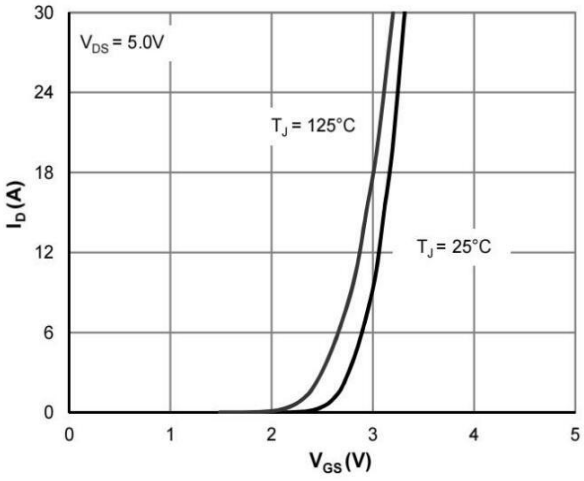
1) The EAS test condition is V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25Ω.

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

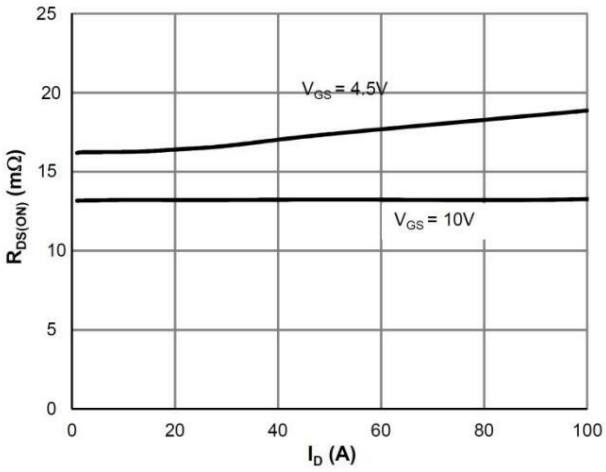
Typical Characteristics



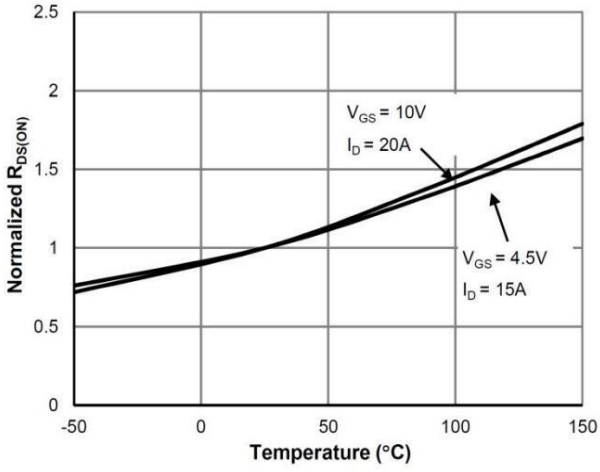
Typical Output Characteristics



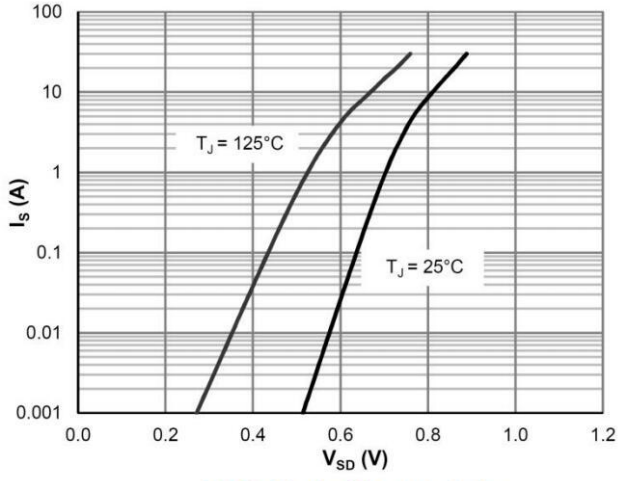
Transfer Characteristics



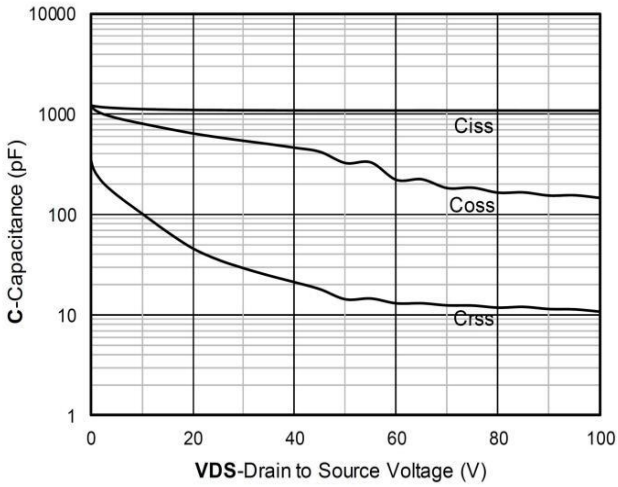
On-Resistance vs.Drain Current



On-Resistance vs.Junction Temperature

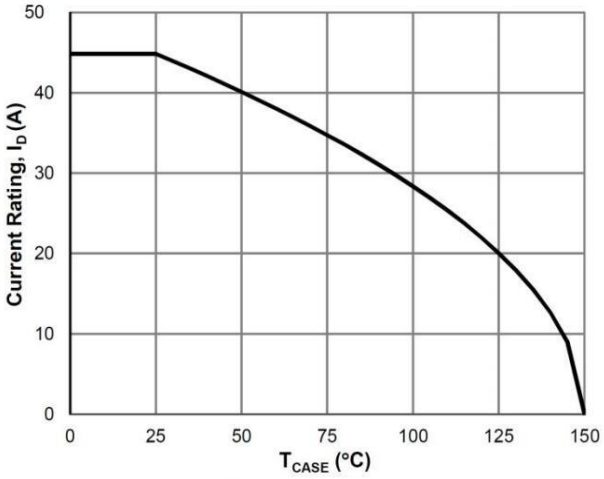


Body-Diode Characteristics

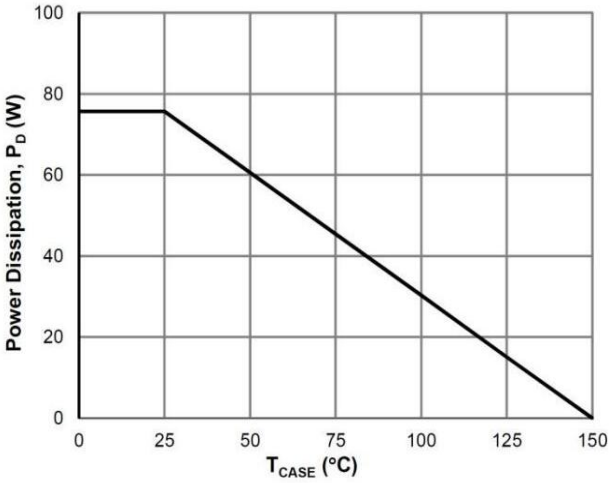


Capacitance Characteristics

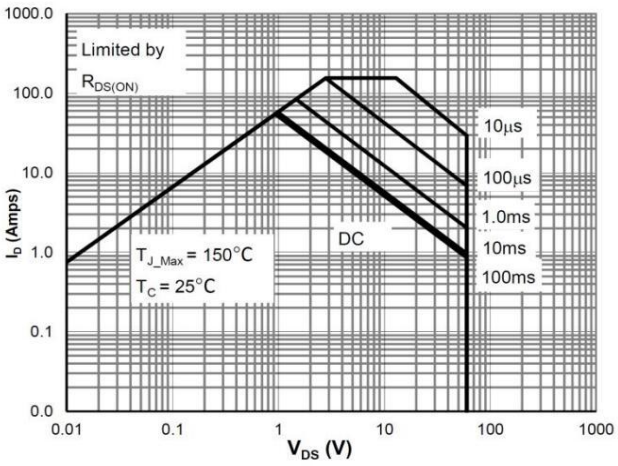
Typical Characteristics



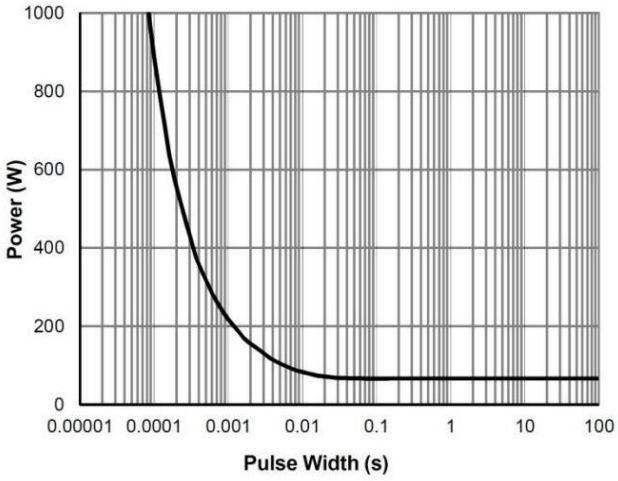
Current De-rating



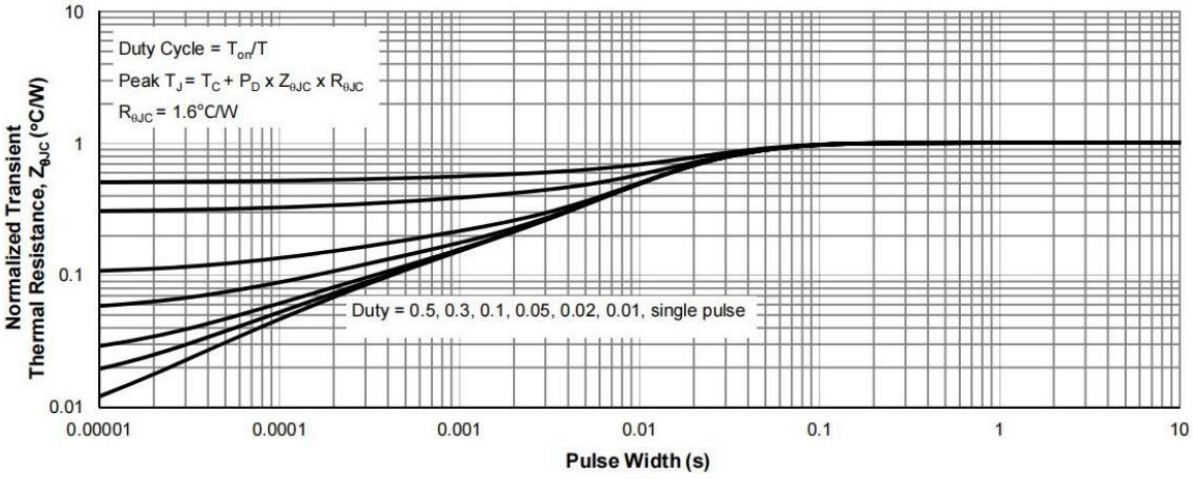
Power De-rating



Maximum Safe Operating Area

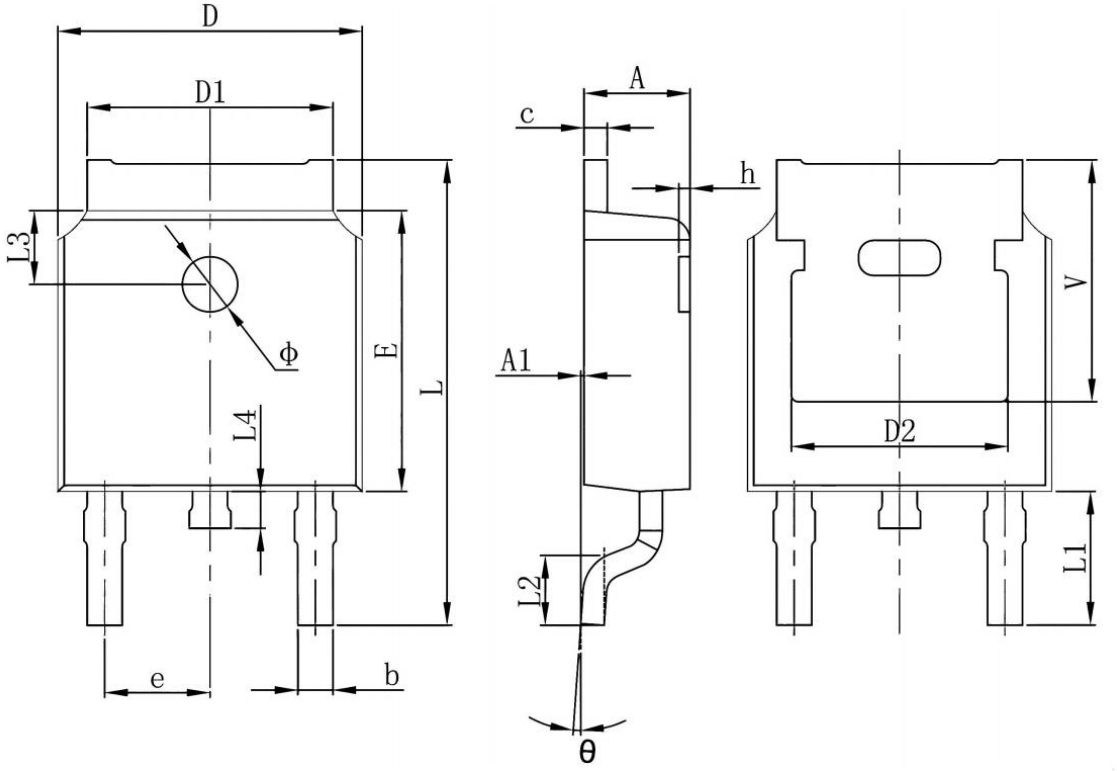


Single Pulse Power Rating,Junction-to-Case



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	0.127	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	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
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°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	