N-Channel Enhancement Mode Power MOSFET

Description

The GT025N06AMA uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

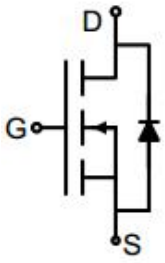
AEC-Q101 Qualified

General Features

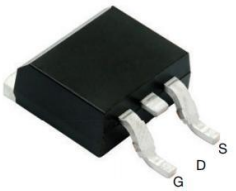
- V_{DS} 60V
- I_D (at V_{GS} = 10V) 170A
- $R_{DS(ON)}$ (at V_{GS} = 10V) < 2.5mΩ
- $R_{DS(ON)}$ (at V_{GS} = 4.5V) < 3mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

- Power switch
- DC/DC converters
- Synchronous Rectification



Schematic Diagram



TO-263

Device	Package	Marking	Packaging
GT025N06AMA	TO-263	GT025N06	800psc/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Continuous Drain Current	I_D	170	A
Pulsed Drain Current (note1)	I_{DM}	300	A
Gate-Source Voltage	V_{GS}	±20	V
Single pulse avalanche energy （note2）	E_{AS}	420	mJ
Power Dissipation	P_D	215	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	ºC

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJA}	50	ºC/W
Maximum Junction-to-Case	R_{thJC}	0.58	ºC/W

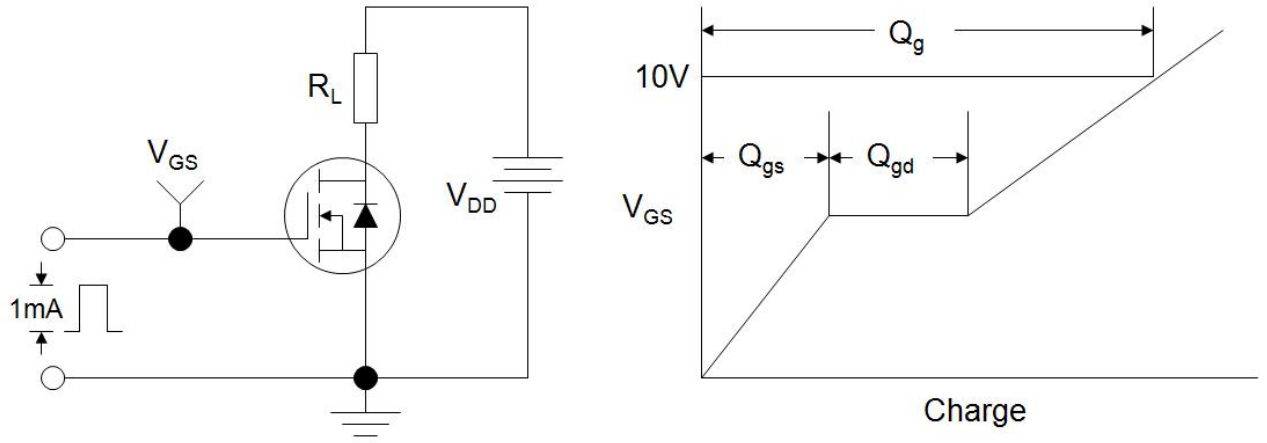
Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	--	--	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.6	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	--	2	2.5	mΩ
		V_{GS} = 4.5V, I_D = 15A	--	2.5	3	
Forward Transconductance	g_{FS}	V_{DS} = 5V,I_D = 20A	--	60	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 30V, f = 1.0MHz	--	5119	--	pF
Output Capacitance	C_{oss}		--	1347	--	
Reverse Transfer Capacitance	C_{rss}		--	78	--	
Total Gate Charge	Q_g	V_{DD} = 30V, I_D = 20A, V_{GS} = 10V	--	70	--	nC
Gate-Source Charge	Q_{gs}		--	21	--	
Gate-Drain Charge	Q_{gd}		--	16	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 30V, I_D = 50A, R_G = 3Ω	--	16	--	ns
Turn-on Rise Time	t_r		--	9	--	
Turn-off Delay Time	$t_{d(off)}$		--	36	--	
Turn-off Fall Time	t_f		--	11	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	170	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 20A, V_{GS} = 0V	--	--	1.2	V
Reverse Recovery Chrage	Qrr	IF=20A, di/dt=500A/us		150	--	nC
Reverse Recovery Time	Trr			30	--	ns

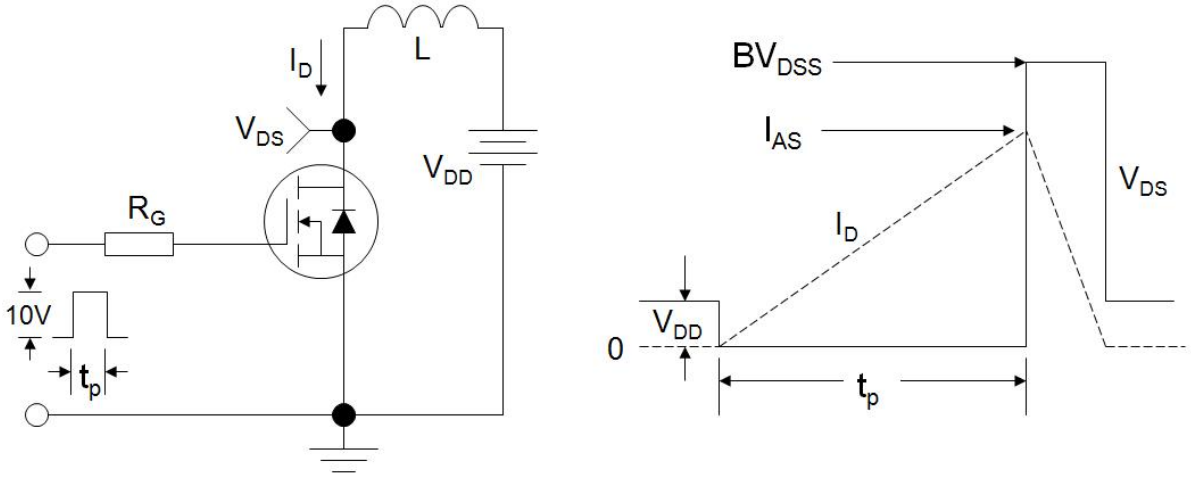
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical RG
3. EAS condition :Tj=25℃ ,VDD=50V,VGS=10V,L=0.5mH,Rg=25Ω

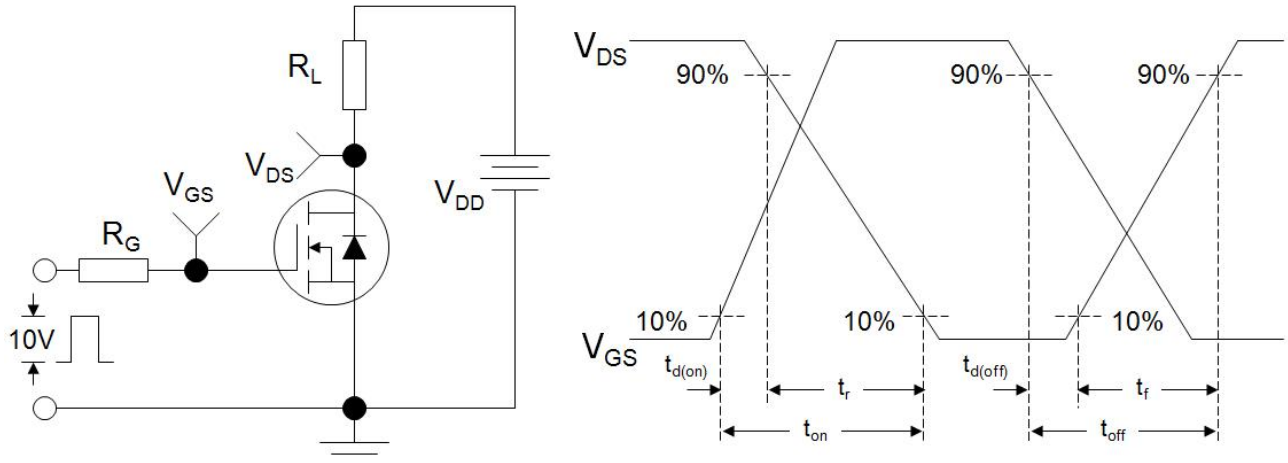
Gate Charge Test Circuit



EAS Test Circuit



Switch Time Test Circuit



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

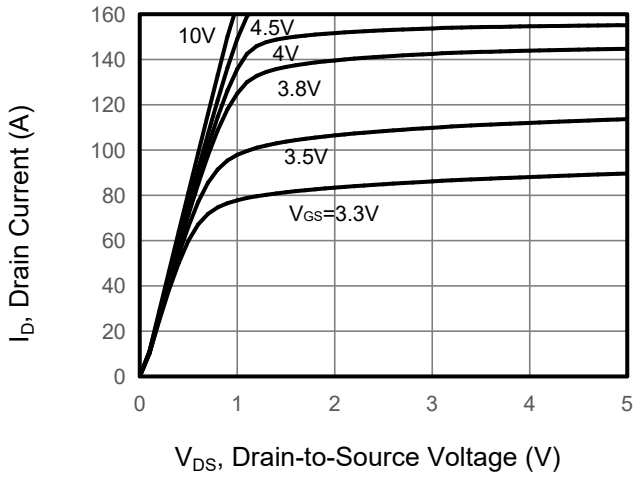


Figure 2. Transfer Characteristics

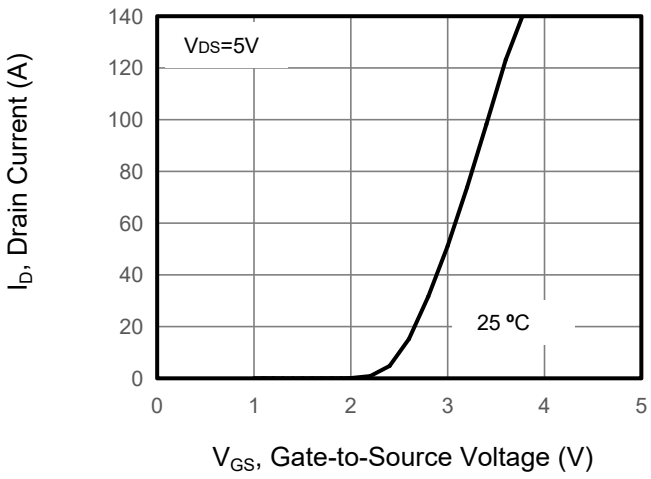


Figure 3. Drain Source On Resistance

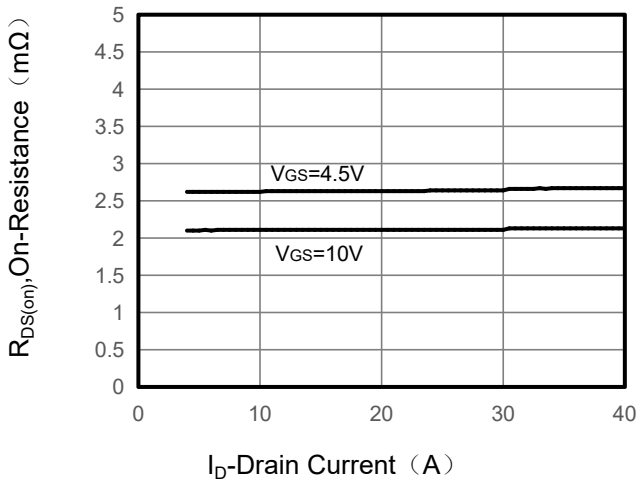


Figure 4. Gate Charge

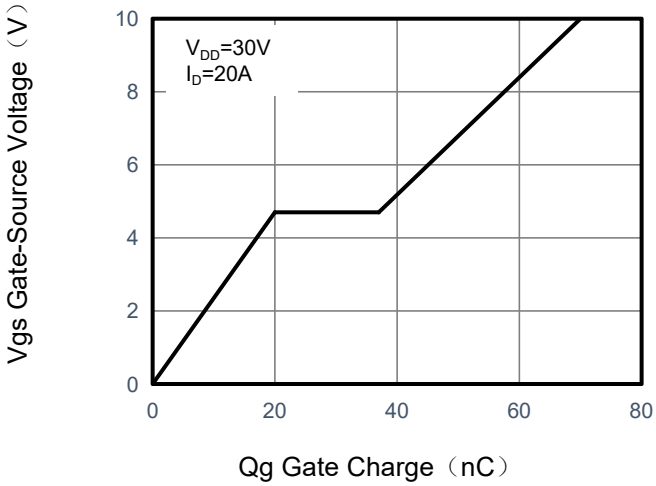


Figure 5. Capacitance vs Vds

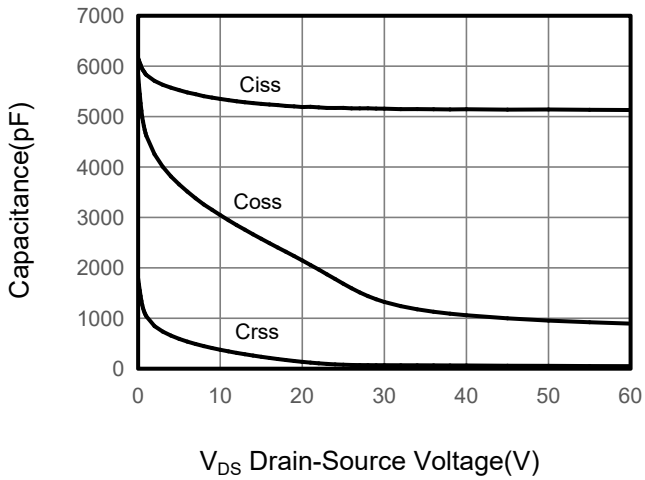
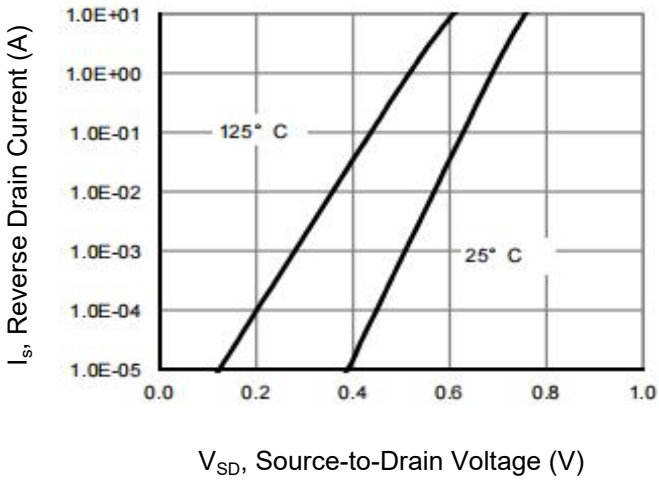


Figure 6. Source-Drain Diode Forward



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Drain-Source On-Resistance

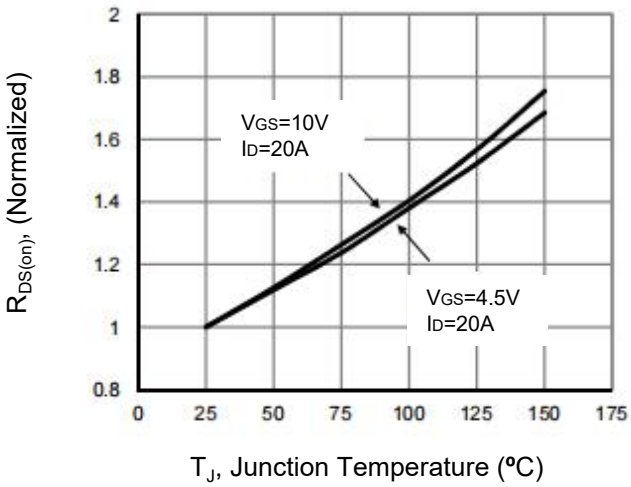


Figure 8. Safe Operation Area

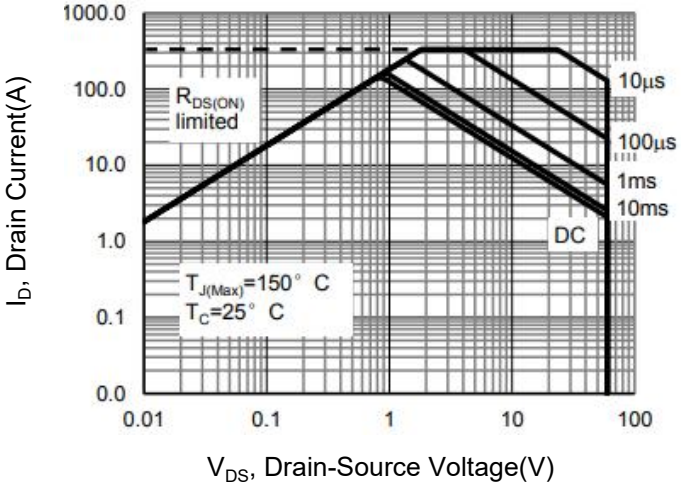
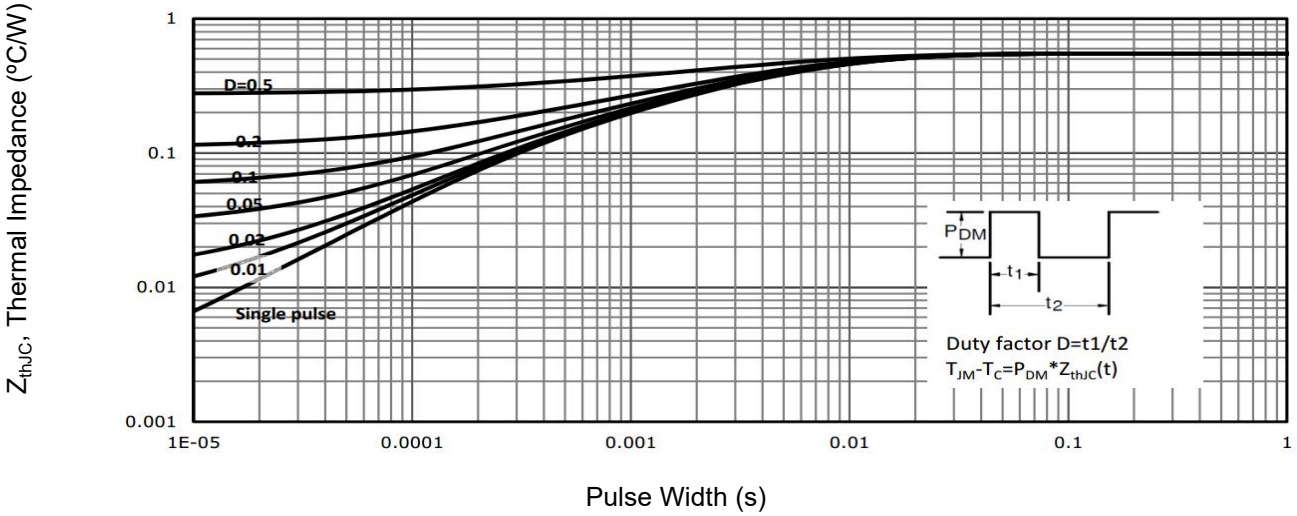
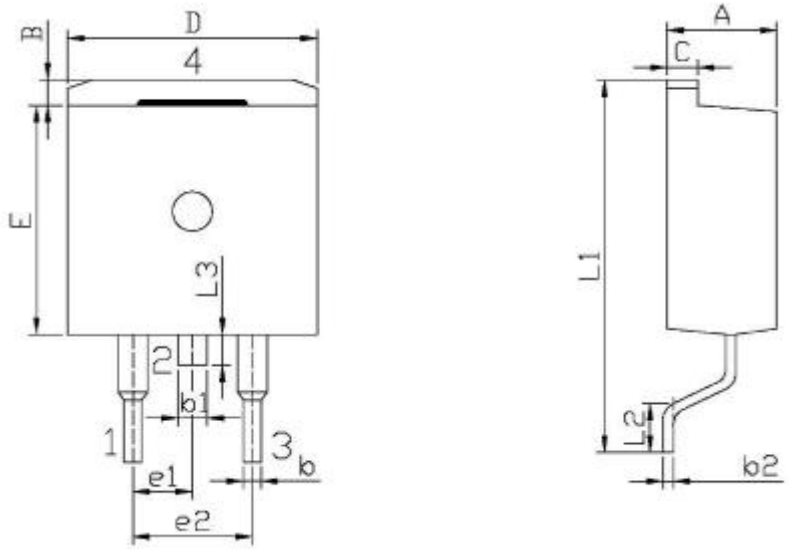


Figure 9. Normalized Maximum Transient Thermal Impedance



TO-263 Package Mechanical Data



UNIT:mm

	MIN	MAX
A	4.30	4.70
B	1.00	1.40
b	0.70	0.90
b1	1.15	1.35
b2	0.40	0.60
C	1.20	1.40
D	9.80	10.20
E	9.00	9.40
e1	2.34	2.74
e2	4.88	5.28
L1	15.00	16.00
L2	2.24	2.84
L3	1.20	1.60