DESCRIPTION

The AM065NS10L is available in TO-220 and TO-263 Packages.

BV_{DSS}	$R_{DS(ON)}$	I_D
100V	6mΩ	80A

APPLICATION

- Synchronous rectification
- High speed switching applications

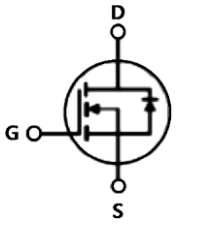
ORDERING INFORMATION

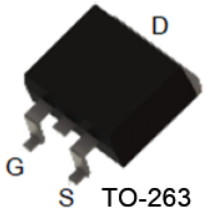
Package Type	Part Number	
TO-220 SPQ:50pcs/Tube	T3	AM065NS10LT3U
		AM065NS10LT3VU
TO-263 SPQ:800pcs /Reel	S2	AM065NS10LSR
		AM065NS10LSVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

FEATURE

- Fast Switching
- $R_{DS(ON)typ.}$=6mΩ @ V_{GS}=10V
- Low On-Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- High avalanche ruggedness

PIN DESCRIPTION





Pin#		Symbol	Function
TO-220	TO-263		
1	1	G	Gate
2	2,4	D	Drain
3	3	S	Source

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	100	V
Continuous Drain Current, Silicon Limited	I_D	96	A
Continuous Drain Current, Package Limited		80	A
Continuous Drain Current @T_C=100°C, Silicon Limited		60.7	A
Pulsed Drain Current	I_{DM}(1)	320	A
Gate-Source Voltage	V_{GS}	±20	V
Avalanche Energy	E_{AS}(2)	225	mJ
Power Dissipation	P_D	125	W
Derating Factor above 25°C		1	W/℃
Operating Junction and Storage Temperature Range	T_J , T_{stg}	150 , –55 to 150	℃
Maximum Temperature for Soldering	T_L	260	℃
THERMAL RESISTANCE			
Thermal Resistance, Junction-Case	$R_{\theta JC}$	1	℃/W
Thermal Resistance, Junction-Ambient	$R_{\theta JA}$	62.5	

(1) Repetitive Rating : Pulse width limited by maximum junction temperature

(2) L=0.5mH, Ias=30A, Start T_J =25℃

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}=0V, I_D=250μA	100	110	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V @T_C=125°C	-	-	100	μA
Gate-Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+20V	-	-	100	nA
Gate-Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-20V	-	-	-100	nA
ON CHARACTERISTICS						
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=35A	-	8.2	9.5	mΩ
		V_{GS}=10V, I_D=50A	-	6	6.5	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.8	2.5	V
Dynamic CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0, f=1MHz	-	3670	-	pF
Output Capacitance	C_{oss}		-	780	-	
Reverse Transfer Capacitance	C_{rss}		-	12	-	
Total Gate Charge	Q_g	V_{DD}=50V, I_D=50A, V_{GS}=10V	-	65	-	nC
Gate-Source charge	Q_{gs}		-	13	-	
Gate-Drain charge	Q_{gd}		-	11	-	
Gate resistance	R_G	V_{GS}=0, V_{DS}=0	-	1.2	-	Ω
Switching CHARACTERISTICS						
Turn-on Delay Time	$t_{d(ON)}$	V_{DD}=50V, I_D=50A, V_{GS}=10V, R_G=3Ω, Resistive Load	-	17	-	nS
Rise Time	t_r		-	36	-	
Turn-Off Delay Time	$t_{d(OFF)}$		-	40	-	
Fall Time	t_f		-	24	-	
Source-Drain Diode CHARACTERISTICS						
Continuous Source Current	I_S		-	-	60	A
Maximum Pulsed Current	I_{SM}		-	-	320	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=50A	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_S=20A, V_{GS}=0, di/dt=100A/us	-	65	-	ns
Reverse Recovery Charge	Q_{rr}		-	120	-	nC

* Pulse width tp≤300μs, δ≤2%.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Safe Operating Area

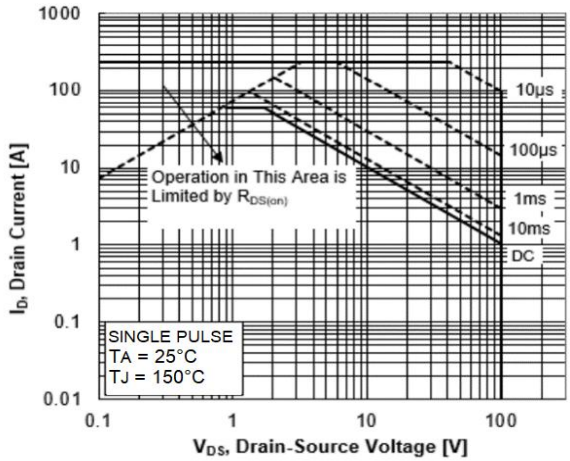


Fig 2. Maximum Power Dissipation Vs Case Temperature

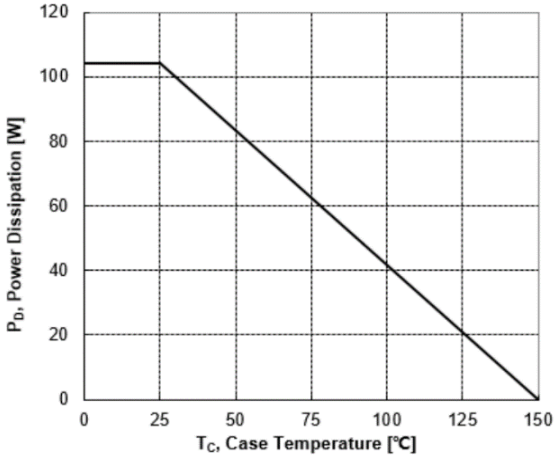


Fig 3. Maximum Continuous Drain Current Vs Case Temperature

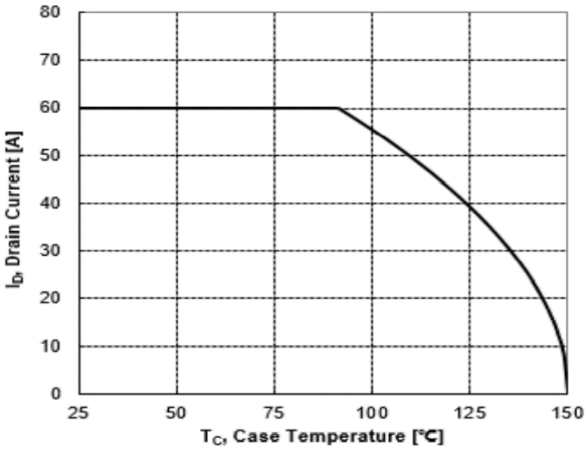


Fig 4. Typical Output Characteristics

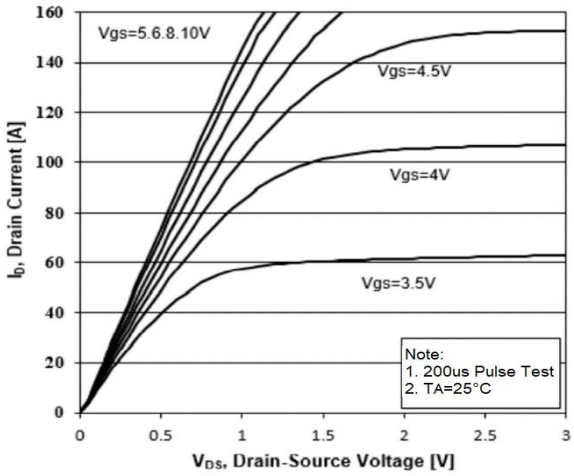


Fig 5. Transient Thermal Impedance

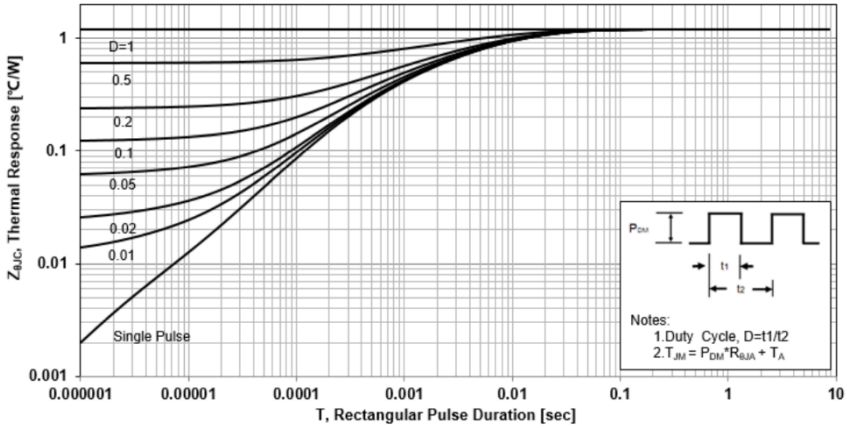


Fig 6. Typical Transfer Characteristics

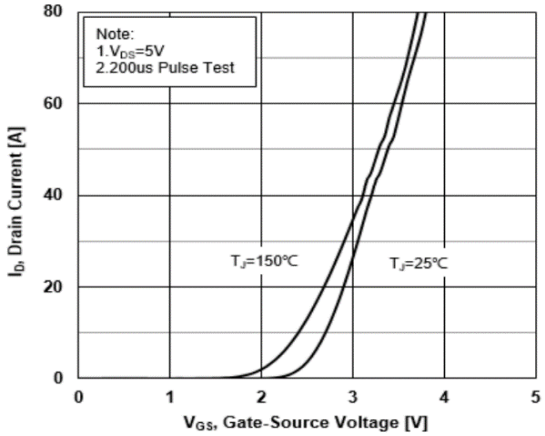


Fig 7. Source-Drain Diode Forward Characteristics

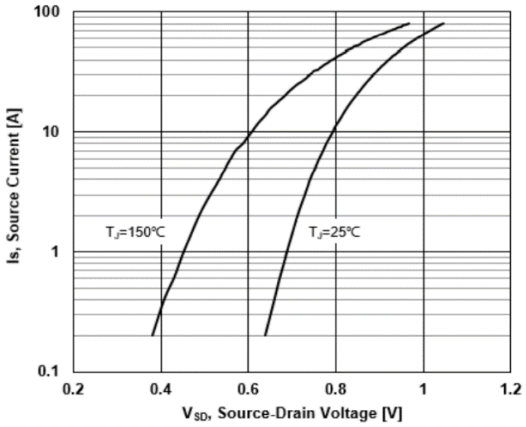


Fig 8. Drain-Source On-Resistance vs Drain Current

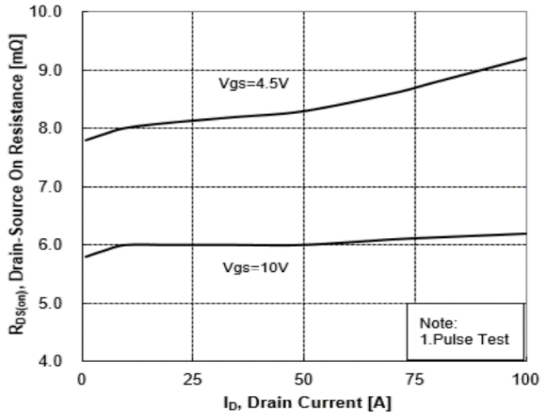


Fig 9. Normalized On-Resistance vs Junction Temperature

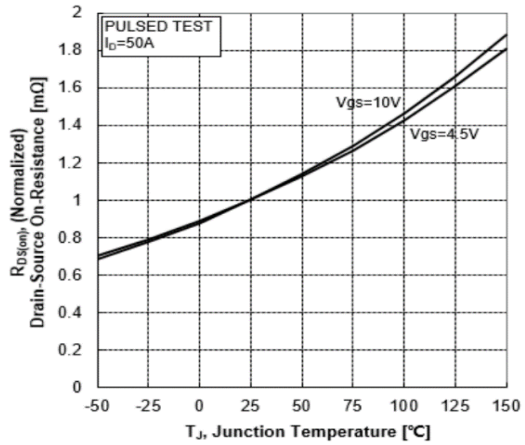


Fig 10. Normalized Threshold Voltage vs Junction Temperature

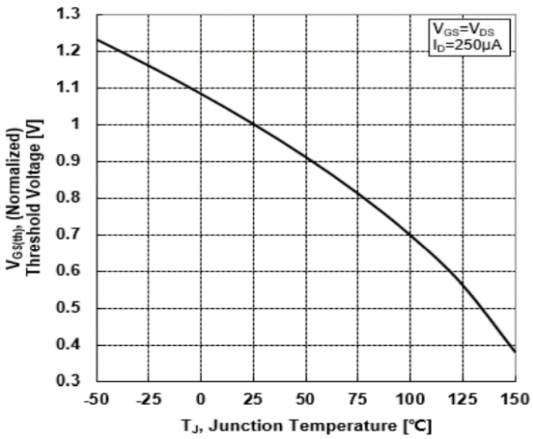


Fig 11. Normalized Breakdown Voltage vs Junction Temperature

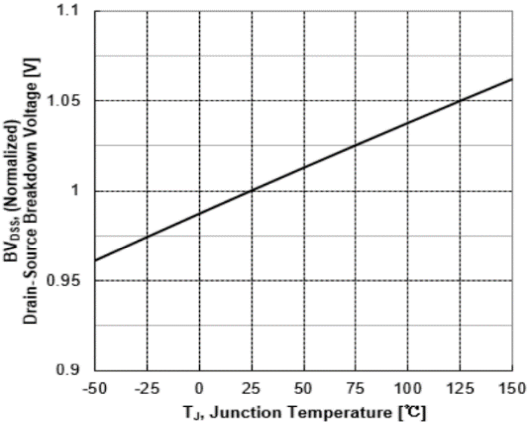


Fig12. Capacitance Characteristics

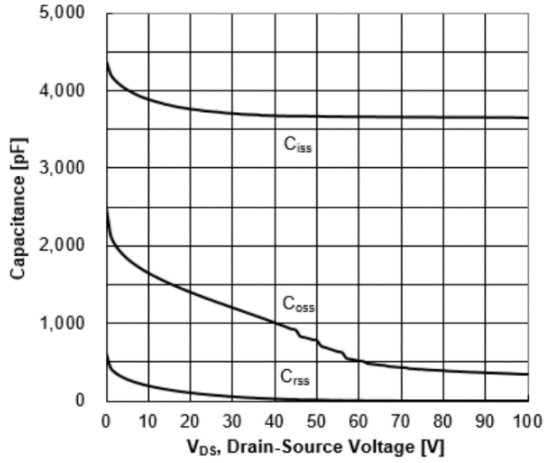


Fig 13. Typical Gate Charge vs Gate-Source Voltage

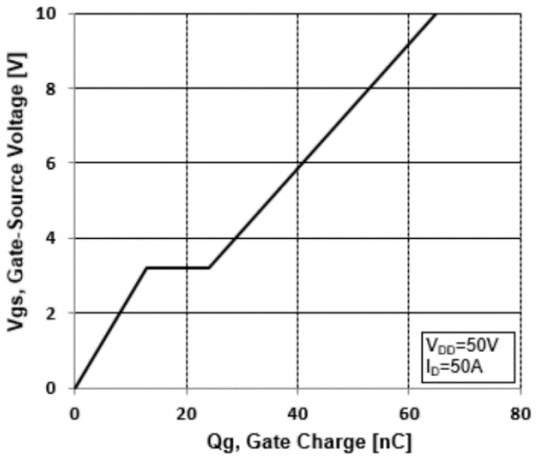


Fig 14. Resistive Switching Test Circuit

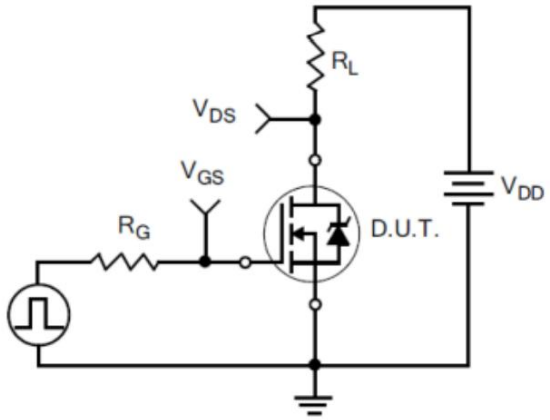


Fig 15. Resistive Switching Waveforms

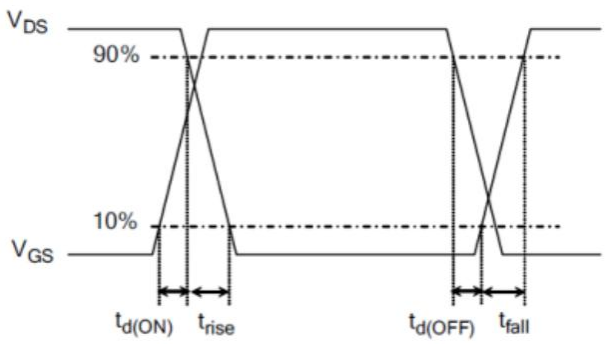


Fig 16. Gate Charge Test Circuit

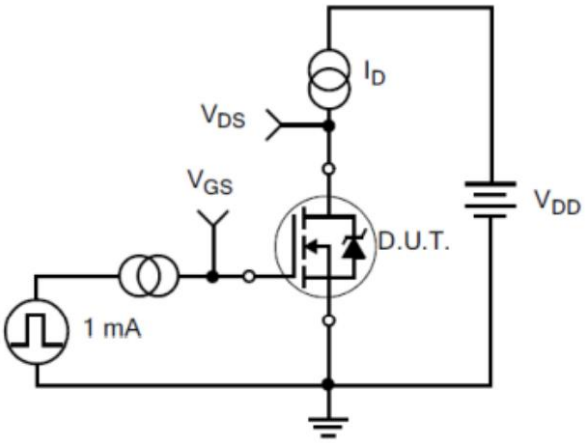


Fig 17. Gate Charge Waveforms

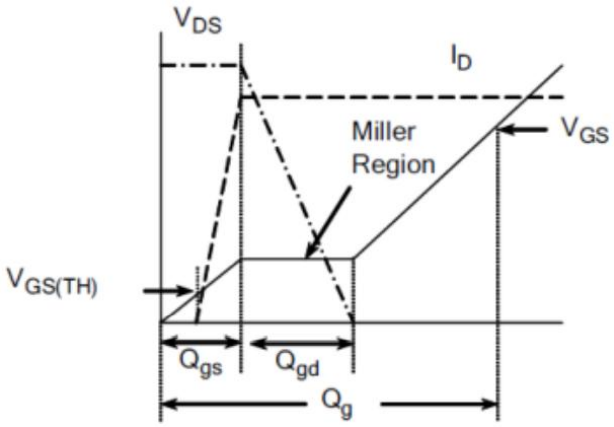


Fig 18. Diode Reverse Recovery Test Circuit

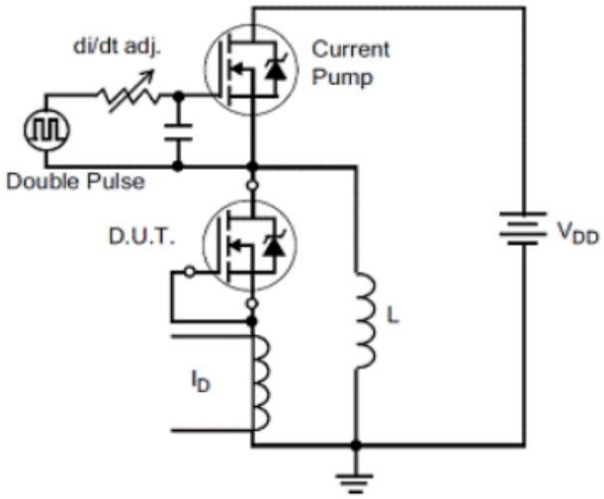


Fig 19. Diode Reverse Recovery Waveform

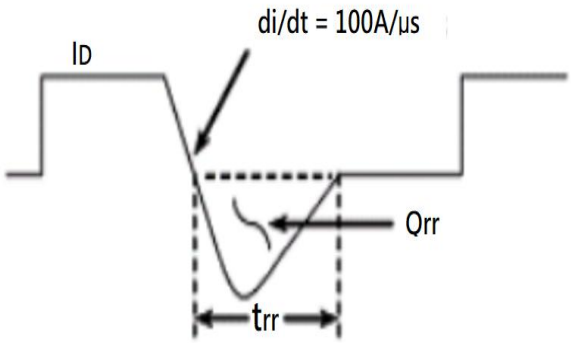


Fig 20. Unclamped Inductive Switching Test Circuit

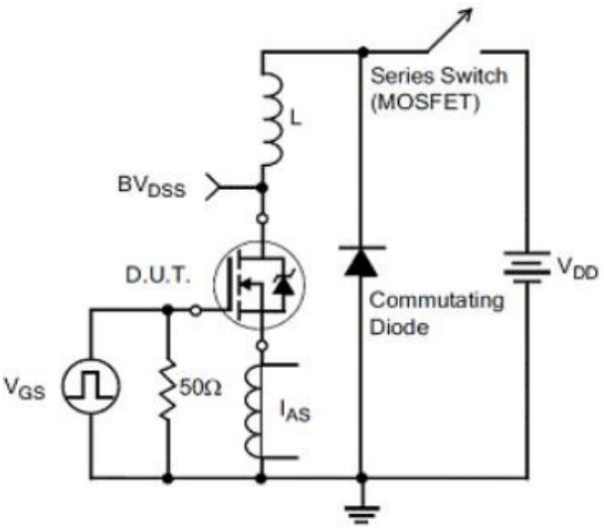
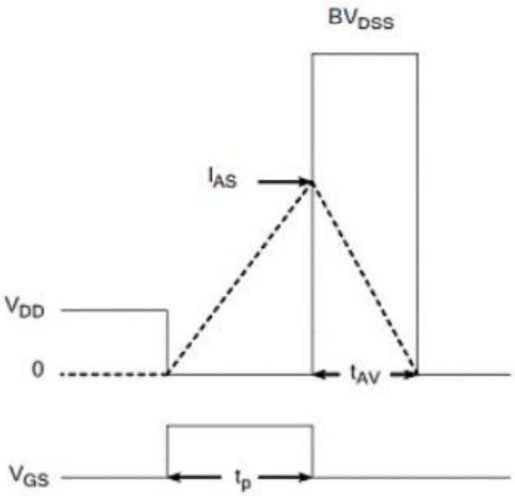


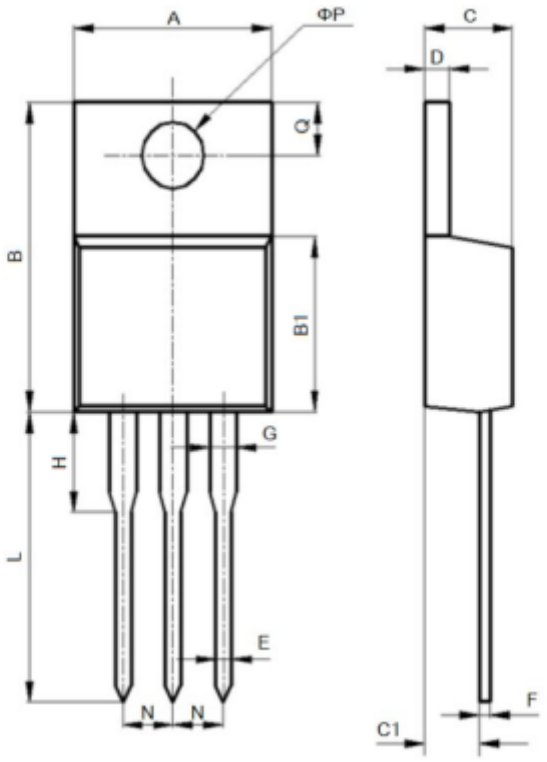
Fig 21. Unclamped Inductive Switching Waveform



$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

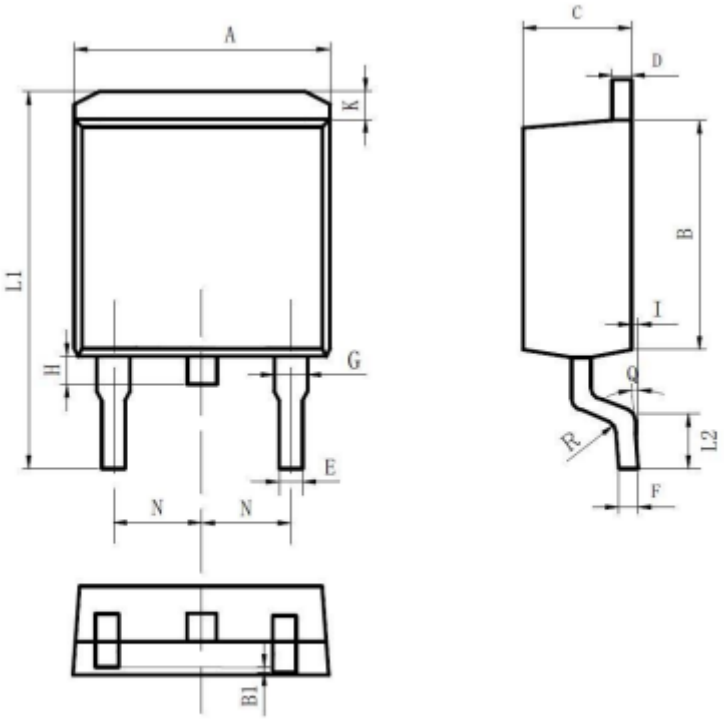
PACKAGE INFORMATION

Dimension in TO-220 (Unit: mm)



Symbol	Min.	Max.
A	9.600	10.600
B	15.000	16.000
B1	8.900	9.500
C	4.300	4.800
C1	2.300	3.100
D	1.200	1.400
E	0.700	0.900
F	0.300	0.600
G	1.170	1.370
H	2.700	3.800
L	12.600	14.800
N	2.340	2.740
Q	2.400	3.000
ΦP	3.500	3.900

Dimension in TO-263 (Unit: mm)



Symbol	Min.	Max.
A	9.800	10.400
B	8.900	9.500
B1	0.000	0.100
C	4.400	4.800
D	1.160	1.370
E	0.700	0.950
F	0.300	0.600
G	1.070	1.470
H	1.300	1.800
K	0.950	1.370
L1	14.500	16.500
L2	1.600	2.300
I	0.000	0.200
Q	0°	8°
R	0.4°	
N	2.390	2.690

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