

●General Description

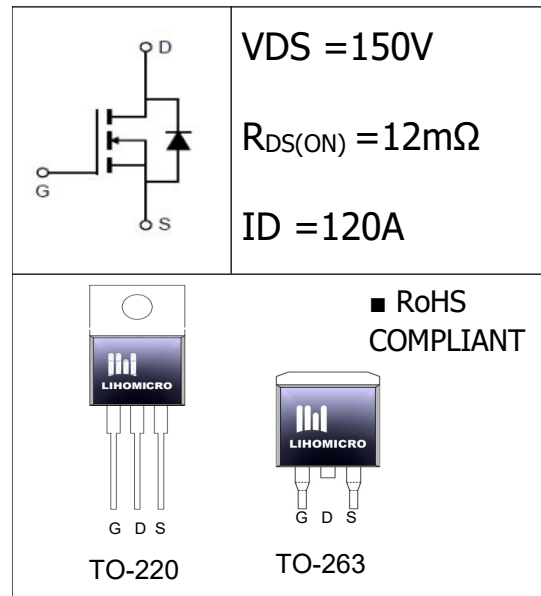
The N-Channel MOSFET LH012N150 has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

●Features

- Fast switching
- Low $R_{DS(on)}$ & FOM
- Advanced Trench Technology

●Application

- DC-DC Convertor
- Power Supplies
- UPS



●Ordering Information:

Part Number	LH012N150	LH012N150
Package	TO-220	TO-263
Basic Ordering Unit (pcs)	1000	800
Normal Package Material Ordering Code	LH012N150T-TO220-TU	LH012N150T63-TO263-TAP
Halogen Free Ordering Code	LH012N150T-TO220-TU-HF	LH012N150T63-TO263-TAP-HF

●Absolute Maximum Ratings (TC = 25°C)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, $T_C = 25^\circ\text{C}$	I_D	120	A
	$I_{D(TC=100^\circ\text{C})}$	80	
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax}) ²	I_D pulse	480	A
Single Pulse Avalanche Energy ¹	E_{AS}	1025	mJ
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	300	W
Operating Temperature	T_J	-55~+175	°C
Storage Temperature	T_{STG}	-55~+175	°C

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	150	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	4	5	V
Drain-source On Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=60A$	--	12	15	mΩ
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V,$ $T_J=25^\circ C$ $T_J=125^\circ C$	--	--	1	uA
			--	--	10	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	--	--	±100	nA
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	--	3.2	--	Ω
Input Capacitance	C_{iss}	$V_{GS}=0V,$ $V_{DS}=25V$ $f=1.0MHz$	--	5785	--	pF
Output Capacitance	C_{oss}		--	548	--	
Reverse transfer Capacitance	C_{rss}		--	321	--	
Turn-on delay time	$T_{d(on)}$	$V_{DS}=75V$ $V_{GS}=10V$ $I_D=60A$ $R_G=3\Omega$ (Note 2,3)	--	26	--	nS
Rise time	T_r		--	39	--	
Turn -Off Delay Time	$T_{d(off)}$		--	77	--	
Fall time	T_f		--	58	--	
Total Gate Charge	Q_g	$I_D=60A,$ $V_{DS}=120V$ $V_{GS}=10V$	--	137	--	nC
Gate-to-Drain Charge	Q_{gd}		--	46	--	
Gate-to-Source Charge	Q_{gs}		--	28	--	
Diode Forward Voltage	V_{SD}	$I_S=60A$ $V_{GS}=0V$	--	0.8	1.0	V
Reverse Recovery Time	t_{rr}	$I_{SD}=60A, V_{GS}=0V,$ $dI_F/dt=100A/\mu S$	--	46	--	nS
Reverse Recovery Charge	Q_{rr}		--	98	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case ¹	R_{thJC}	0.5	°C/W
Thermal Resistance Junction-ambient ¹	R_{thJA}	62.5	°C/W

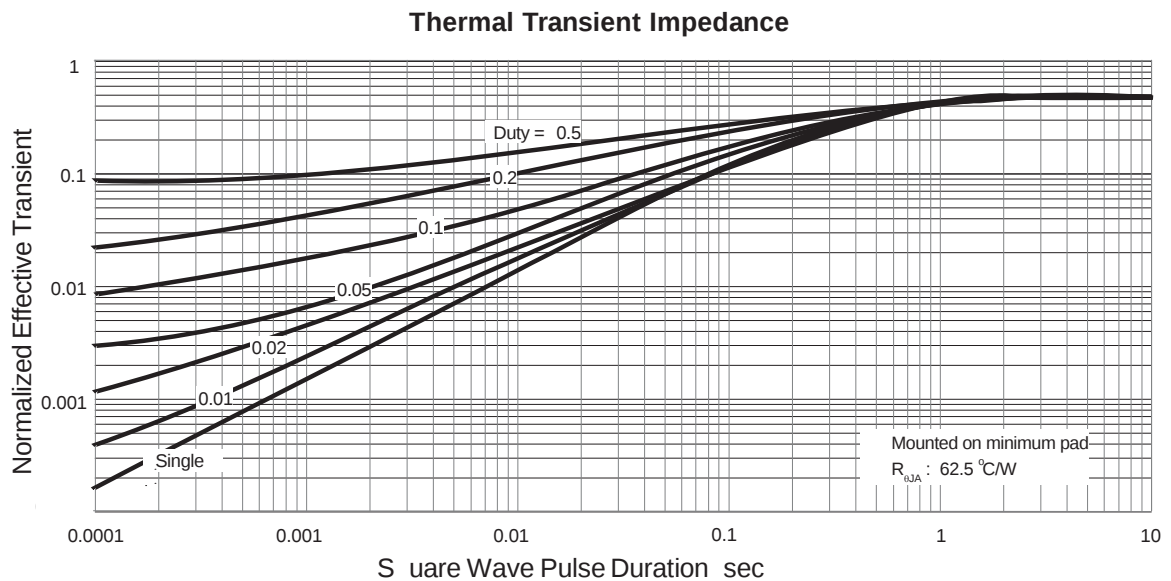
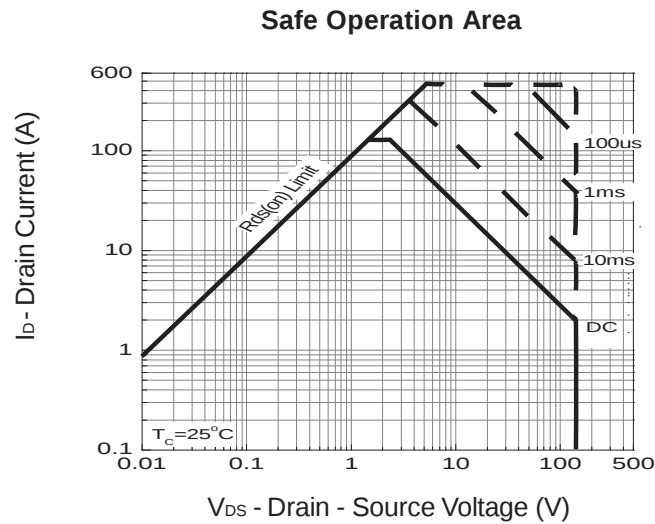
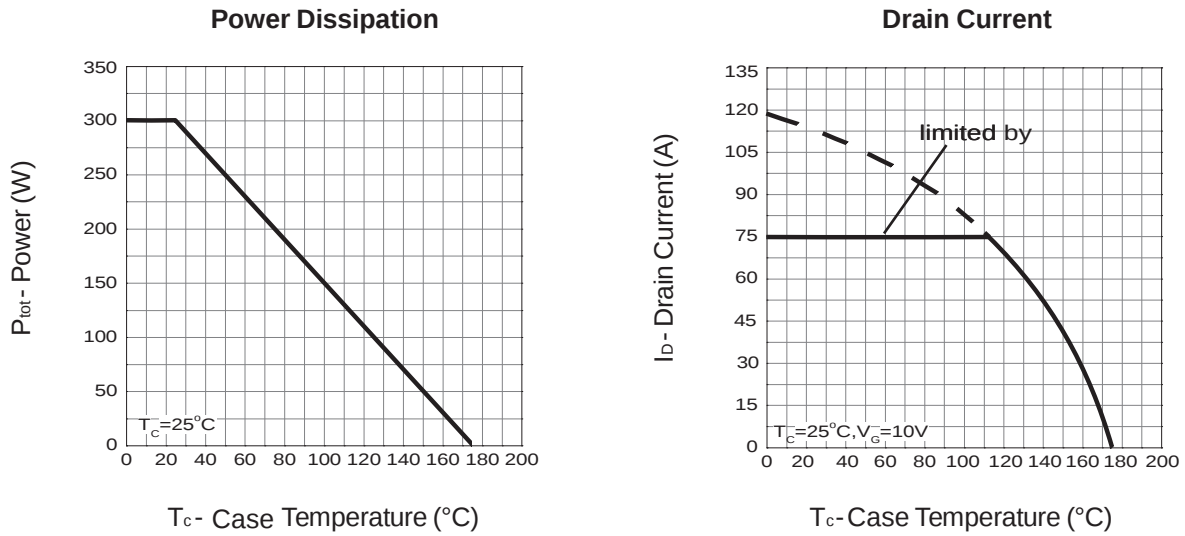
Notes:

1. EAS is tested at starting $T_J = 25^\circ C$, $L = 1mH$, $I_{AS} = 36A$, $V_{GS} = 10V$.

2. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

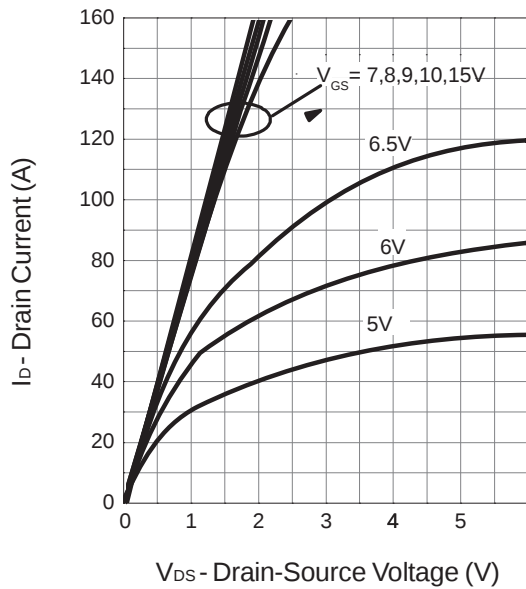
3. Essentially independent of operating temperature

● **Typical Characteristics**

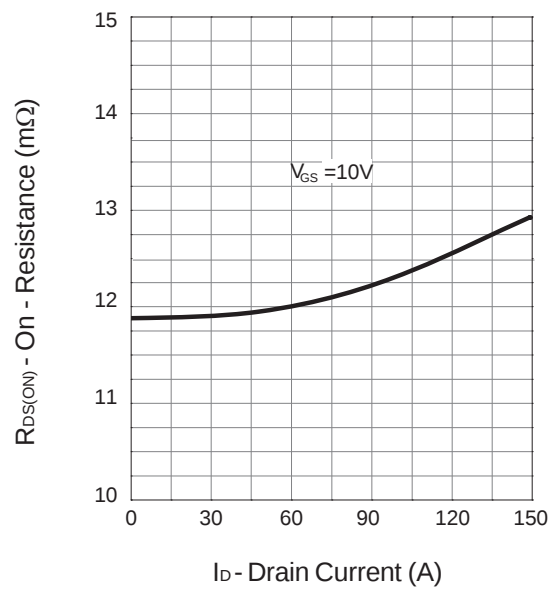


•Typical Characteristics(cont.)

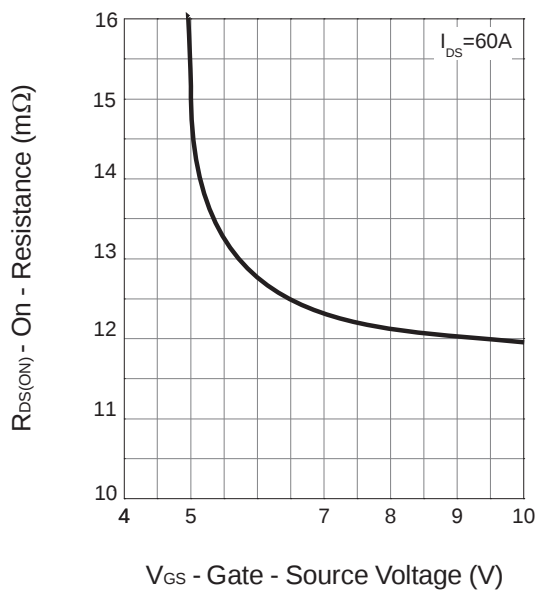
Output Characteristics



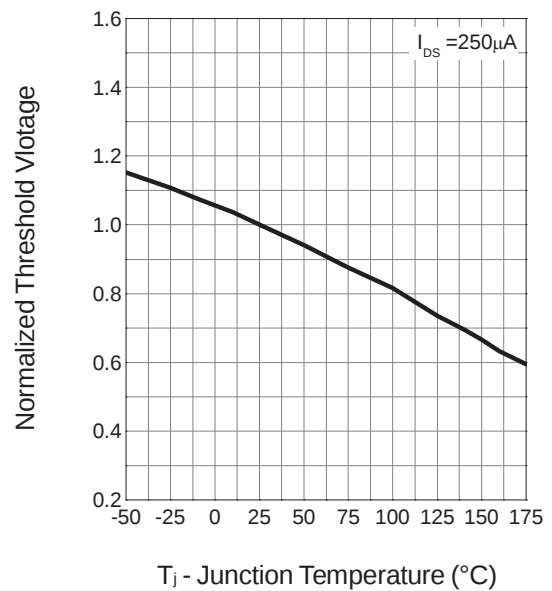
Drain-Source On Resistance



Drain-Source On Resistance

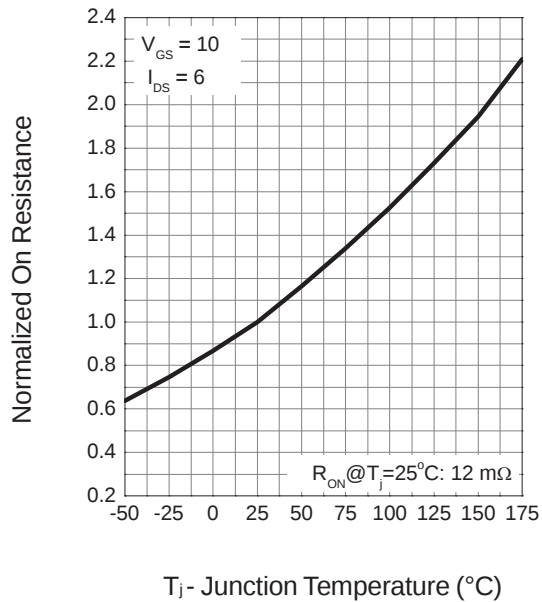


Gate Threshold Voltage

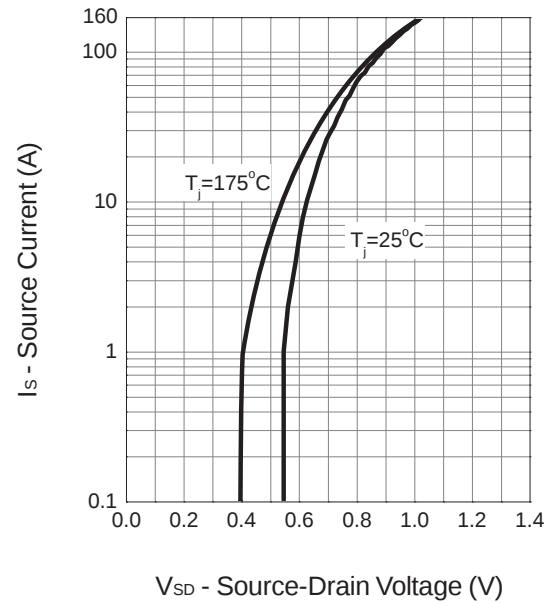


•Typical Characteristics(cont.)

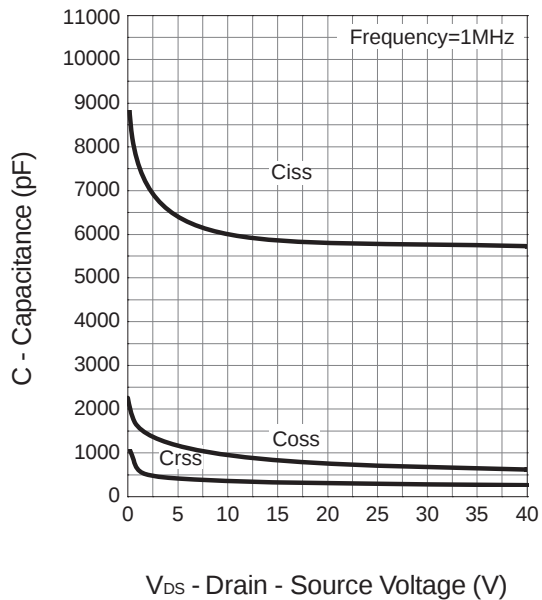
Drain-Source On Resistance



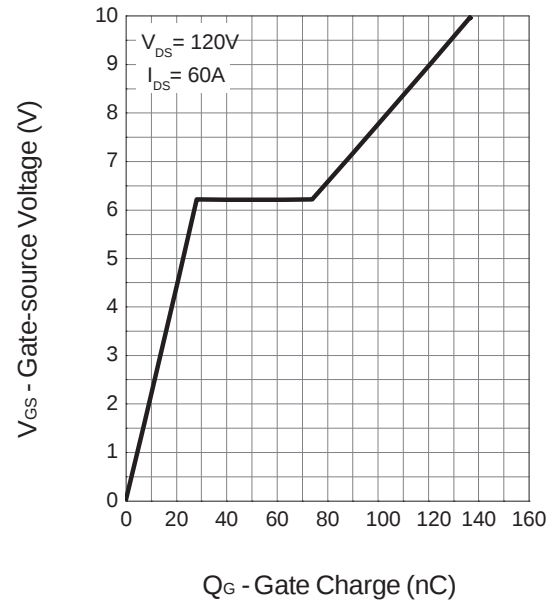
Source-Drain Diode Forward



Capacitance



Gate Charge



● **Test Circuits and Waves**

Fig.1 Gate Charge Waveform

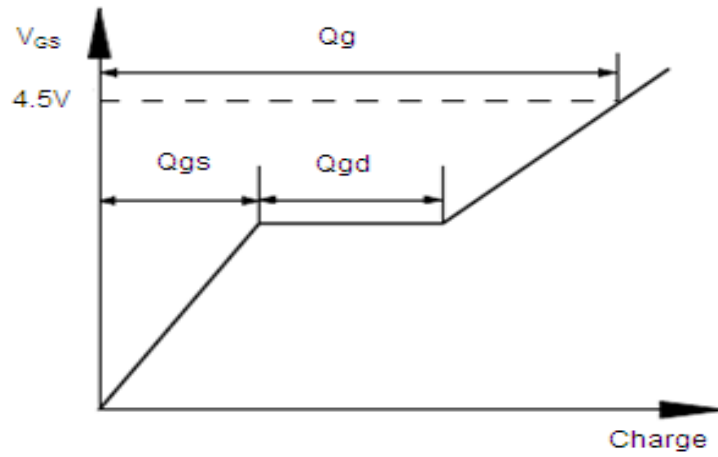


Fig.2 Switching Time Waveform

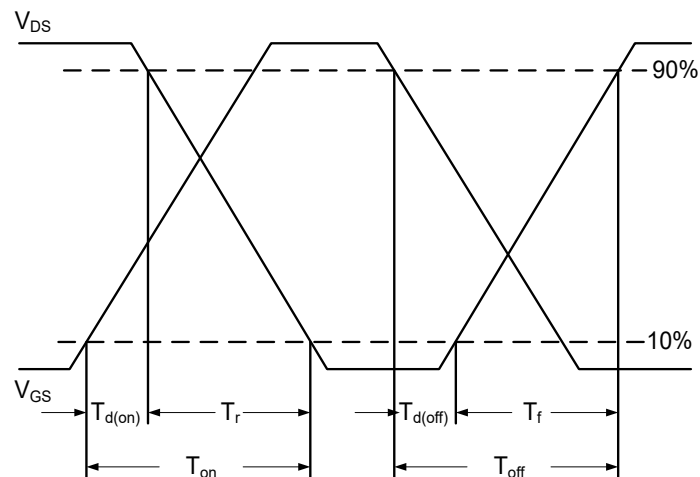
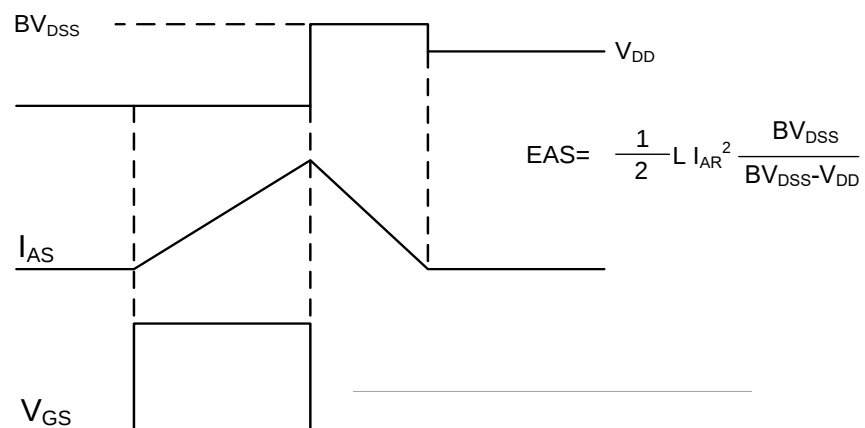


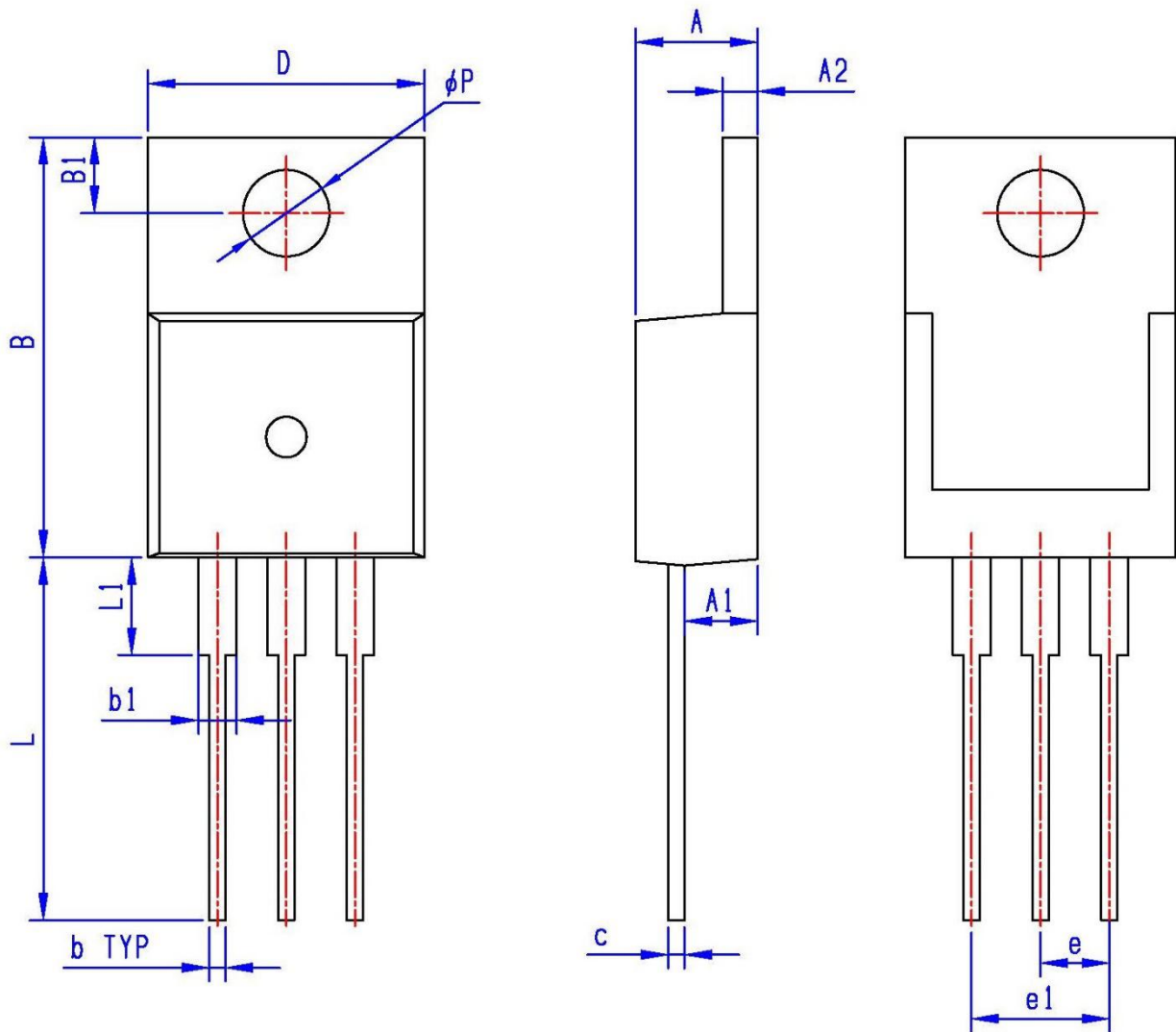
Fig.11 Unclamped Inductive Switching Waveform



•Dimensions (TO-220)

Unit: mm

SYMBOL	min	max	SYMBOL	min	max
A	4.25	4.85	B1	2.60	3.00
A1	2.30	3.00	e	2.40	2.70
A2	1.20	1.40	e1	4.95	5.25
b	0.60	0.90	L	12.60	14.40
b1	1.10	1.70	L1	2.40	4.00
c	0.40	0.70	∅P	3.50	3.90
D	9.80	10.60			
B	15.20	16.20			



• **Dimensions (TO-263)**

Unit: mm

SYMBOL	min	max	SYMBOL	min	max
A	4.25	4.85	B1	1.20	1.80
A1	2.30	3.00	e	2.40	2.70
A2	1.20	1.40	L	4.80	5.60
b	0.60	0.90			
b1	1.10	1.70			
c	0.40	0.70			
D	9.80	10.60			
B	10.40	11.40			

