

650V N沟道增强型超结功率场效应管

650V N-CHANNEL Super-Junction POWER MOSFET  
35A/650V

**Discription**

JXM65R110F This N-Channel enhancement mode power MOSFET is produced using advanced Super Junction MOS technology and have very low conduction and switching losses, making the power converter efficient, high power density, and improved thermal behavior. Furthermore, it's universal applicable, i.e., suitable for hard and soft switching topologies.

**Features**

- $V_{DS}=650V$ ,  $I_D=35A$
  - $R_{DS(on)}(max.)=110\text{ m}\Omega@V_{GS}=10V$
  - New revolutionary high voltage technology
  - Ultra low gate charge
  - High peak current capability
- 100% UIS TESTED!**  
**100%  $\Delta V_{ds}$  TESTED!**

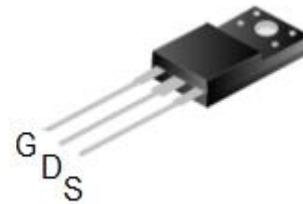
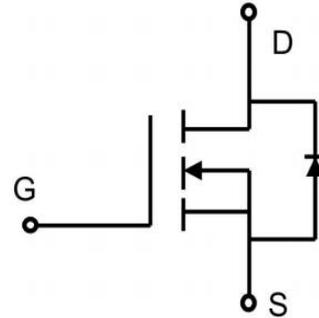
**Applications**

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- LED lighting power

**Note**

- Products made by JUXIN semiconductor

Schematic diagram



ITO-220AB

**ORDERING INFORMATION**

Part No.	Package	Marking	Material	Packing
JXM65R110F	ITO-220AB	JXM65R110F	Pb free	Tube

**ABSOLUTE MAXIMUM RATINGS ( $T_J=25^\circ\text{C}$  unless otherwise noted)**

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage( $V_{GS}=0V$ )	$V_{DS}$	650	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Gate-Source Voltage( $V_{DS}=0V$ ), AC( $f>1\text{HZ}$ )	$V_{GS}$	$\pm 30$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	35
		$T_C=100^\circ\text{C}$	22
Drain Current Pulsed(Note 1)	$I_{DM}$	140	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	PD		26
		-Derate	0.21
Single Pulsed Avalanche Energy (Note 2)	$E_{AS}$	1136	mJ
Reverse Diode dv/dt, $V_{DS}\leq 400V$ (Note 3)	dv/dt	50	V/ns
Drain Source Voltage Slope, $V_{DS}\leq 400V$ (Note 3)	dVds/dt	50	V/ns
Operation Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Continuous Diode Forward Current	$I_S$	35	A
Diode Pulse Current	$I_{S,PULSE}$	140	A
Maximum diode commutation speed, $V_{DS}\leq 400V$ (Note 3)	dir/dt	900	A/ $\mu\text{s}$

Note:

1. Repetitive Rating: Pulse Width  $t_p$  Limited by Maximum Junction Temperature.
2.  $E_{AS}$  condition: Starting  $T_J=25^\circ\text{C}$ ,  $V_{DD}=100V$ ,  $V_G=10V$ ,  $R_G=25\text{ohm}$ ,  $L=79\text{mH}$ ,  $I_{AS}=5.0A$ .
3.  $I_{SD}\leq I_D$ , Starting  $T_J=25^\circ\text{C}$ .



**THERMAL CHARACTERISTICS**

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.8	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	°C/W
Soldering Temperature, Wave Soldering only Allowed at Leads. (1.6mm from Case for 10s)	$T_{sold}$	260	°C

**ELECTRICAL CHARACTERISTICS**

**Off Characteristics**

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	--	--	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=650V, V_{GS}=0V, T_J = 25^\circ C$	--	--	1.0	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=+20V, V_{DS}=0V$	--	--	100	nA
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=-20V, V_{DS}=0V$	--	--	-100	nA

**On Characteristics**

Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	3.0	--	5.0	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=17.5A$	--	90	110	m $\Omega$

**Dynamic Characteristics**

Gate Resistance	$R_g$	$V_{GS}=0V, f=1.0MHz$	--	1.8	--	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=200V, V_{GS}=0V, f=1MHz$	--	3010	--	pF
Output Capacitance	$C_{oss}$		--	83	--	
Reverse Transfer Capacitance	$C_{rss}$		--	5.4	--	

**Switching Characteristics**

Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=400V, V_{GS}=13V, R_G=1.8\Omega$ $I_D=19.1A$ (Note 4,5)	--	24	--	ns
Turn-on Rise Time	$t_r$		--	28	--	
Turn-off Delay Time	$t_{d(off)}$		--	60	--	
Turn-off Fall Time	$t_f$		--	23	--	
Total Gate Charge	$Q_g$	$V_{DD}=480V, V_{GS}=0 \text{ to } 10V,$ $I_D=19.1A$ (Note 4,5)	--	80	--	nC
Gate-Source Charge	$Q_{gs}$		--	28	--	
Gate-Drain Charge	$Q_{gd}$		--	42	--	
Gate Plateau Voltage	$V_{plateau}$		--	8.5	--	

**SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS**

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage	$V_{SD}$	$I_S=19.1A, V_{GS}=0V$	--	0.9	1.4	V
Reverse Recovery Time	$T_{rr}$	$I_S=19.1A, V_{GS}=0V, V_R=400V,$ $di/dt=100A/\mu S$	--	115	--	ns
Reverse Recovery Charge	$Q_{rr}$		--	0.63	--	$\mu C$
Peak Reverse Recovery Current	$I_{rrm}$		--	8.0	--	A

- Note:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2.  $E_{AS}$  condition: Starting  $T_J=25^\circ C, V_{DD}=100V, V_G=10V, R_G=25\Omega, L=79mH, I_{AS}=5.0A$ .
  3.  $I_{SD} \leq I_D, di/dt \leq 200A/\mu s$ , Starting  $T_J = 25^\circ C$ .
  4. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycles  $\leq 2\%$ .
  5. Essentially Independent of Operating Temperature Typical Characteristics.

典型特性曲线

Fig.1: Output Characteristics

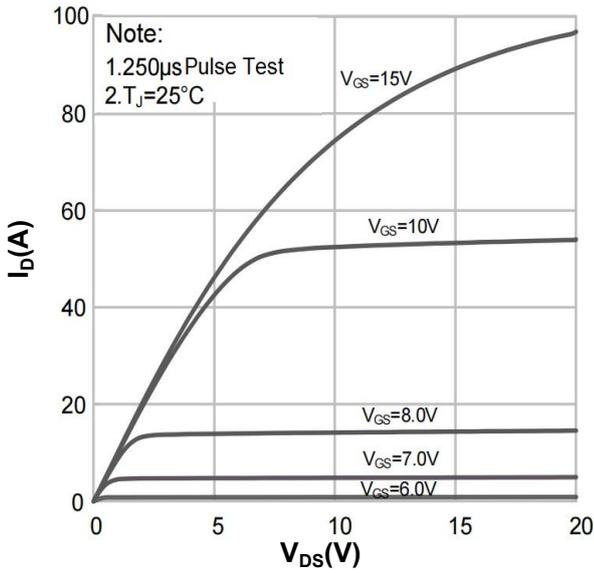


Fig.2: Typical Transfer Characteristics

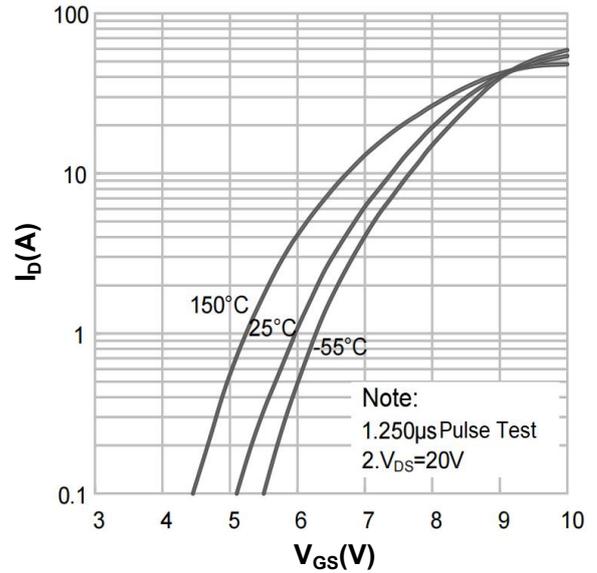


Fig.3: Typical On-resistance vs. Drain Current

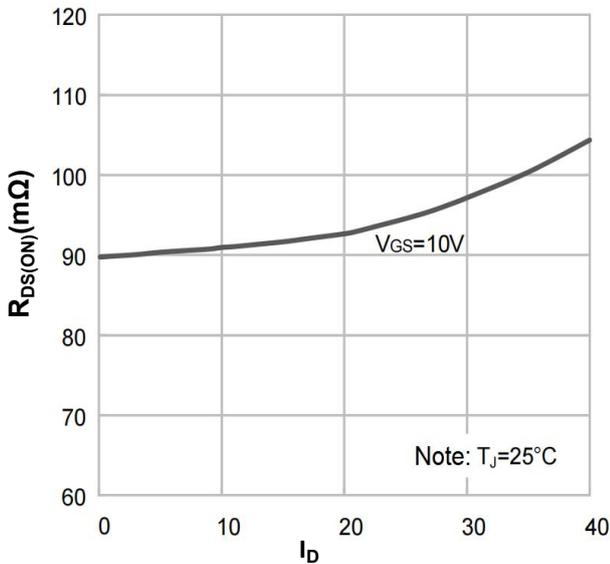


Fig.4: Typical Body Diode Forward Voltage

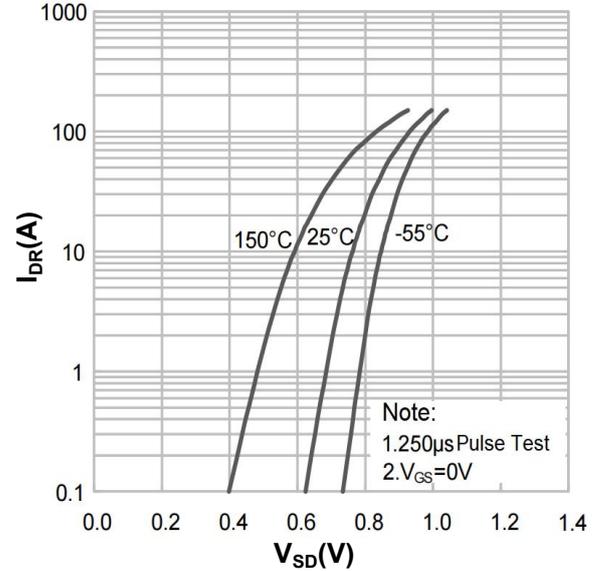


Fig.5: Typical Capacitance Characteristics

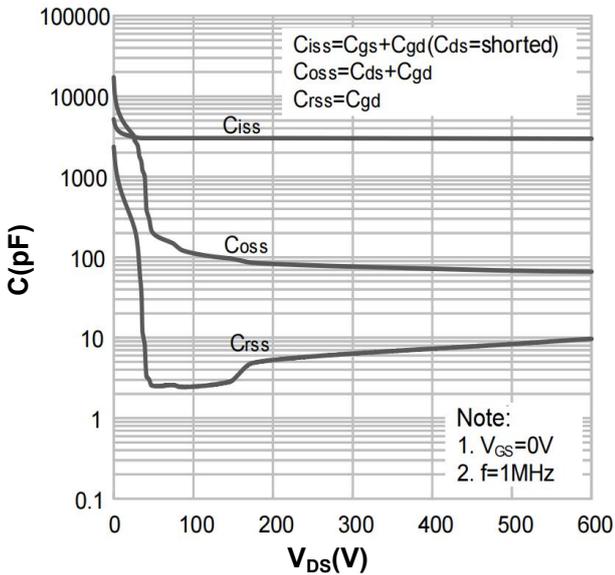
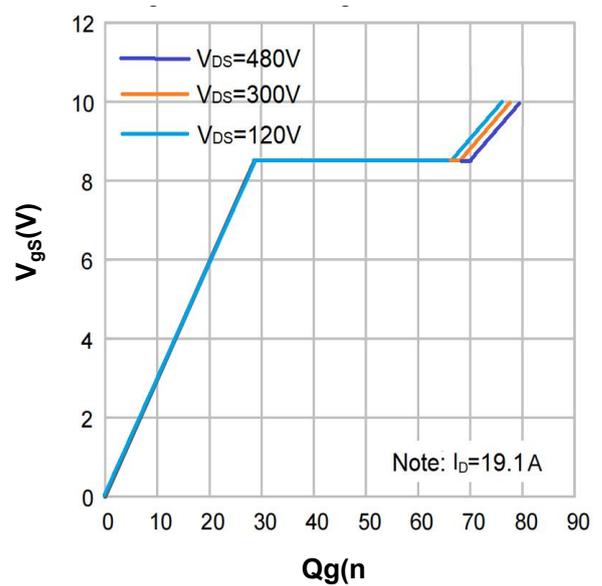


Fig.6: Typical Gate Charge Characteristics



The curve above is for reference only.

典型特性曲线

Fig.7: Normalized Breakdown Voltage vs. Junction Temperature

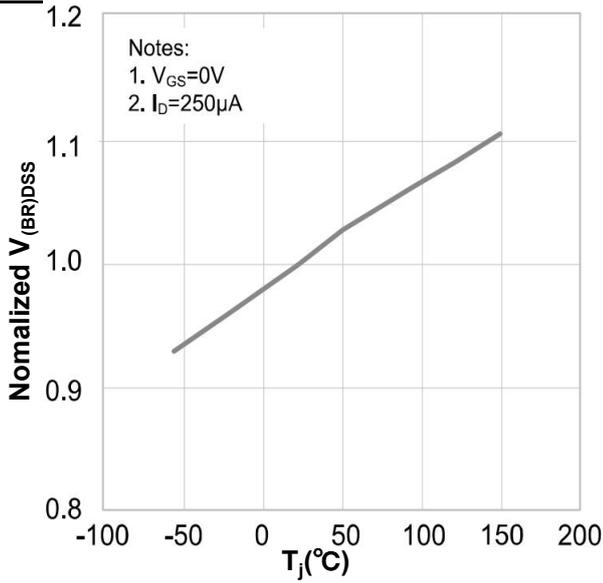


Fig.8: Normalized on Resistance vs. Junction Temperature

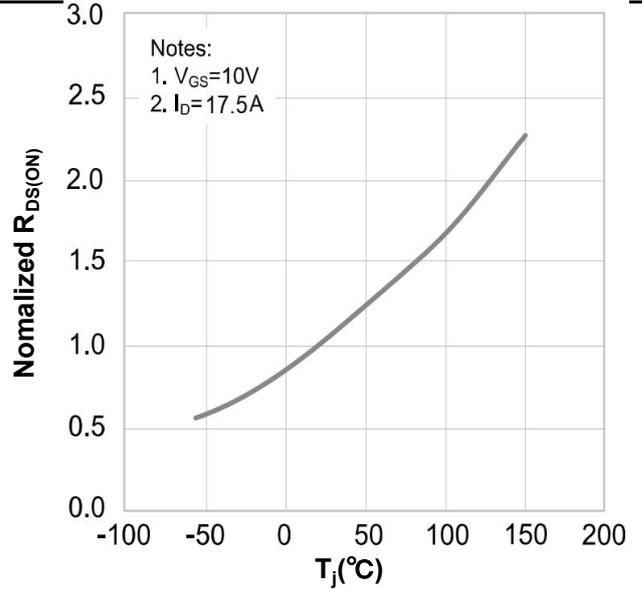


Fig.9: Maximum Safe Operating Area

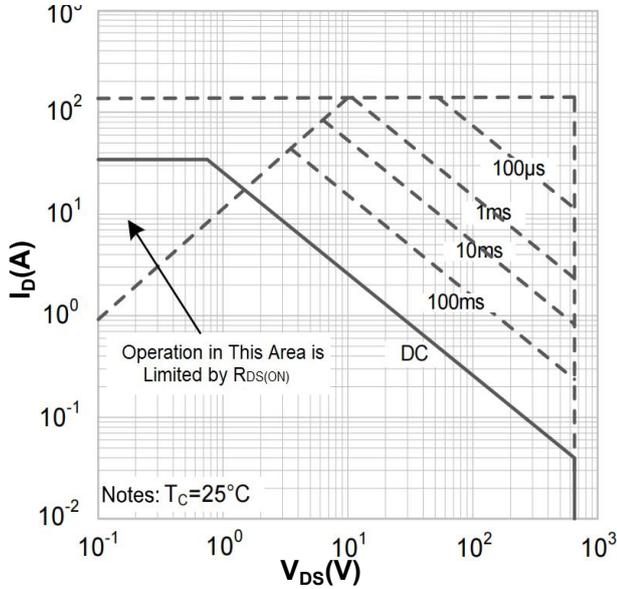
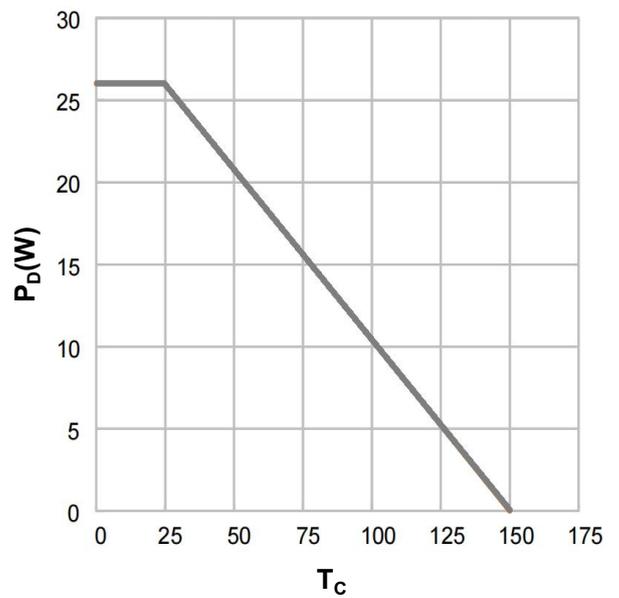


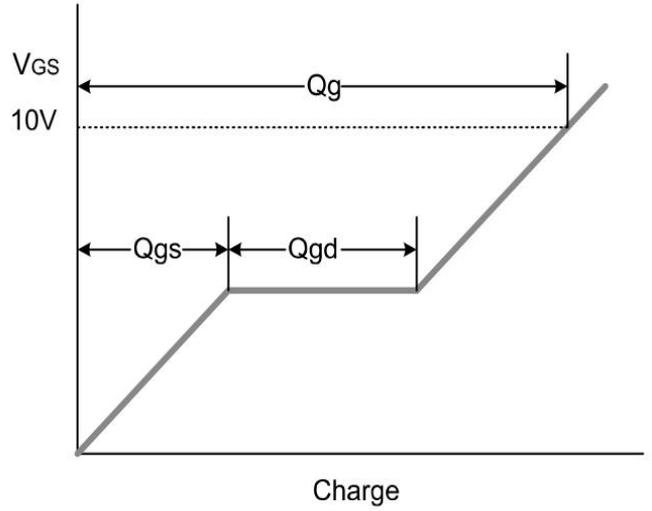
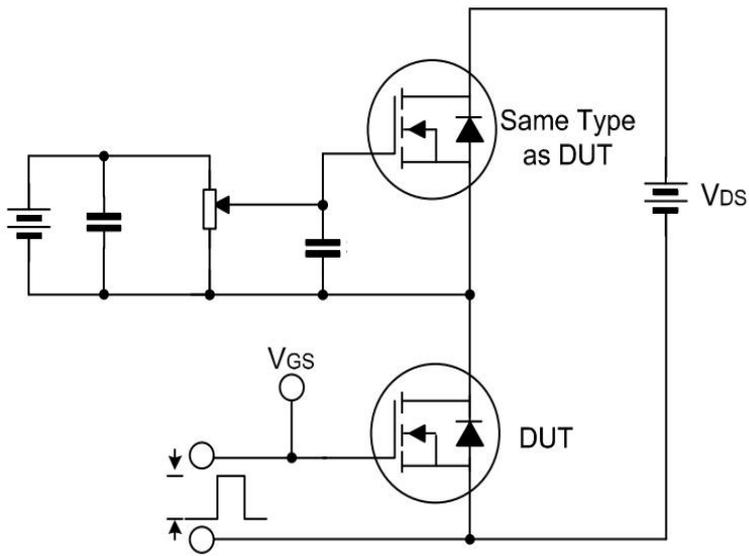
Fig.10: Power dissipation



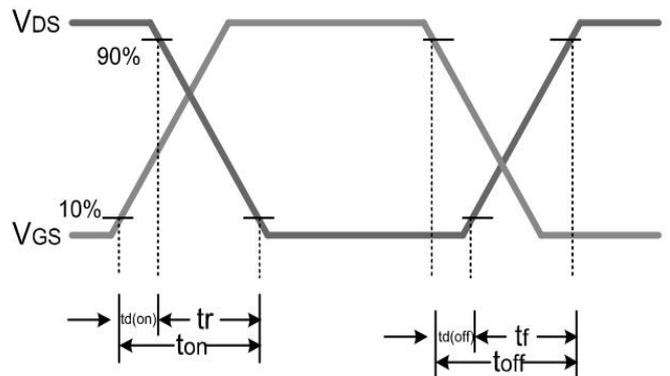
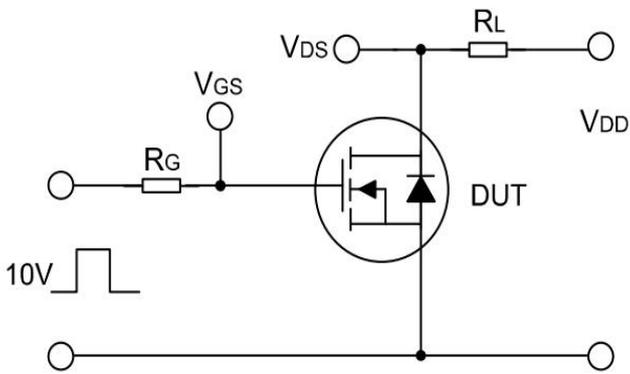
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Test Circuit

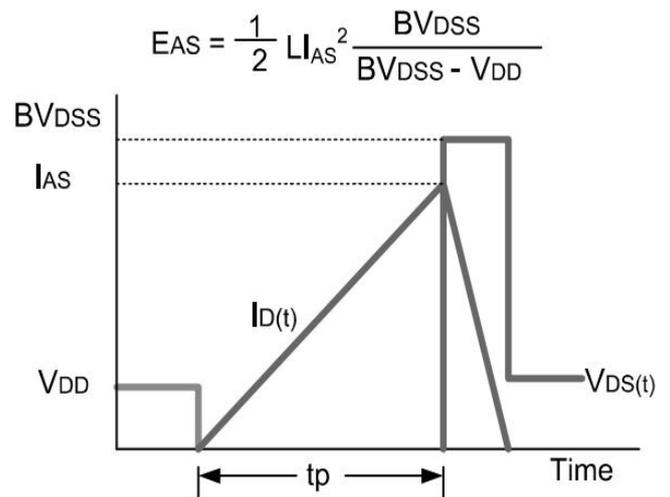
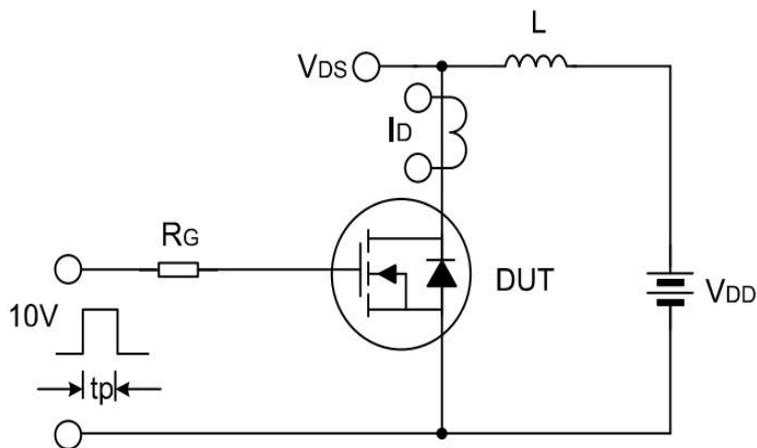
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



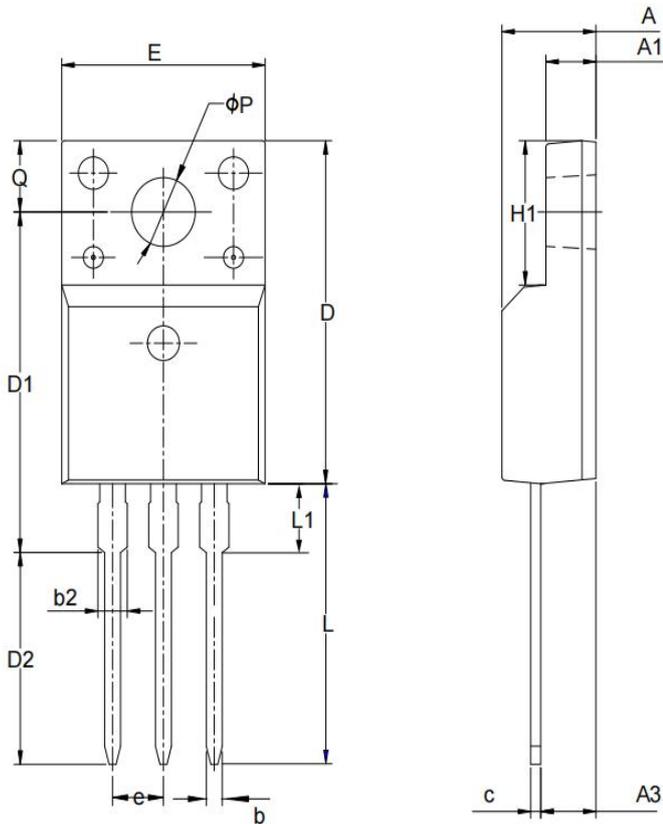
Unclamped Inductive Switching Test Circuit & Waveform



Package Dimensions of ITO-220AB

Package Dimensions of ITO-220AB

Unit:mm



SYMBOL	MILIMETER	
	MIN	MAX
A	4.20	4.95
A1	2.24	3.10
A3	2.30	3.30
b	0.60	1.00
b2	1.15	1.55
c	0.35	0.65
D	14.80	16.40
D1	15.00	17.00
D2	8.80	11.60
E	9.70	10.60
e	2.54BSC	
H1	6.00	7.40
L	11.40	15.10
L1	2.60	4.50
Φ P	2.90	3.40
Q	3.00	3.70

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