Description

EHV6564RNT N-channel Enhancement Mode Power MOSFET

Features

650V,12A

$R_{DS(ON)}$=0.80Ω@ V_{GS} =10V

Fast switching capability

Robust design with better EAS performance

Excellent stability and uniformity

Application

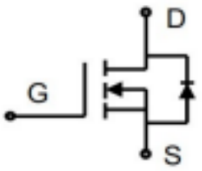
Switched mode power supplies

LED driver

Power faction correction

RoHS

TO-220\220F



N-Channel MOSFET

Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	TUBE (PCS)	Inner BOX (PCS)	Per Carton (PCS)
EHV6564RNT	EHV6564RNT	TAPING	TO-220\220F	13inch	2500	25000

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		650	V
V_{GSS}	Gate-Source Voltage		±30	V
I_D	Continuous Drain Current	T_C = 25℃	12	A
		T_C = 100℃	7.5	A
I_{DM}	Pulsed Drain Current note1		48	A
E_{AS}	Single Pulsed Avalanche Energy note2		500	mJ
P_D	Power Dissipation TO-220F T_C = 25℃		42	W
	Derate above 25℃		0.34	W/℃
	Power Dissipation TO-220 T_C = 25℃		150	W
	Derate above 25℃		1.2	W/℃
$R_{\theta JC}$	Thermal Resistance,Junction to Case		2.98/220F 0.83/220	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient		110/220F 62.5/220	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55to+150	℃

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=650V, V_{GS}=0V	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±30V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2	-	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	V_{GS}=10V, I_D=6A	-	640	800	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	-	2000	-	pF
C_{oss}	Output Capacitance		-	164	-	pF
C_{rss}	Reverse Transfer Capacitance		-	7.4	-	pF
Q_g	Total Gate Charge	V_{DD}=520V, I_D=12A, V_{GS}=10V	-	10.8	-	nC
Q_{gs}	Gate-Source Charge		-	15	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	41.9	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=325V, I_D=12A, R_{GEN}=10Ω	-	14.6	-	ns
t_r	Turn-on Rise Time		-	37.8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	69.3	-	ns
t_f	Turn-off Fall Time		-	15.8	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_F=12A	-	-	1.5	V
trr	Body Diode Reverse Recovery Time	V_R=325V I_F=12A,dI/dt=100A/μs	-	450.4	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	4.75	-	uC
Irrm	Peak Reverse Recovery Current			21.1		A

Typical Performance Characteristics

Electrical Characteristics Diagrams

Figure 1. Typical Output Characteristics

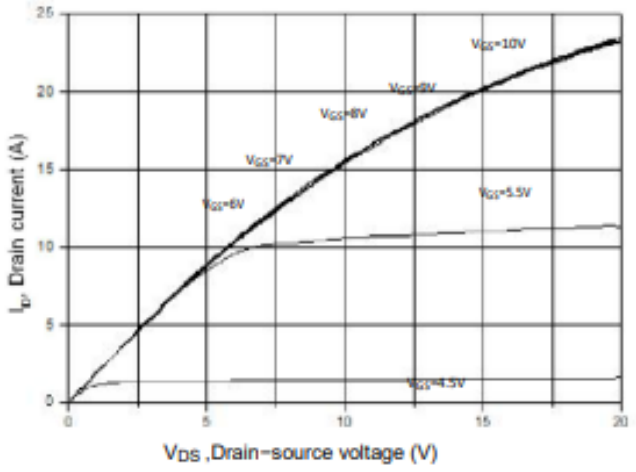


Figure 2. Transfer Characteristics

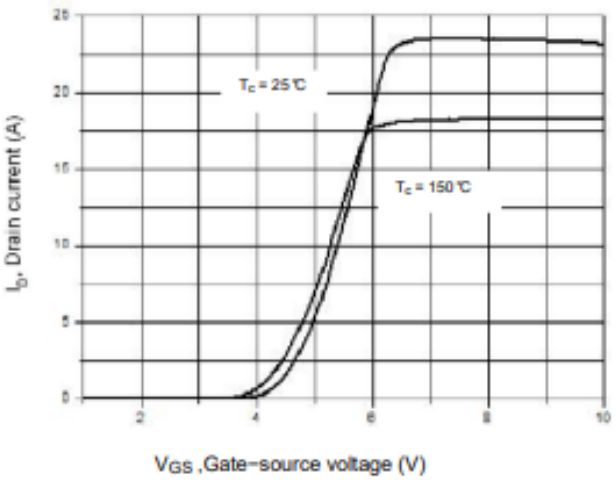


Figure 3. On-Resistance Variation vs. Drain Current

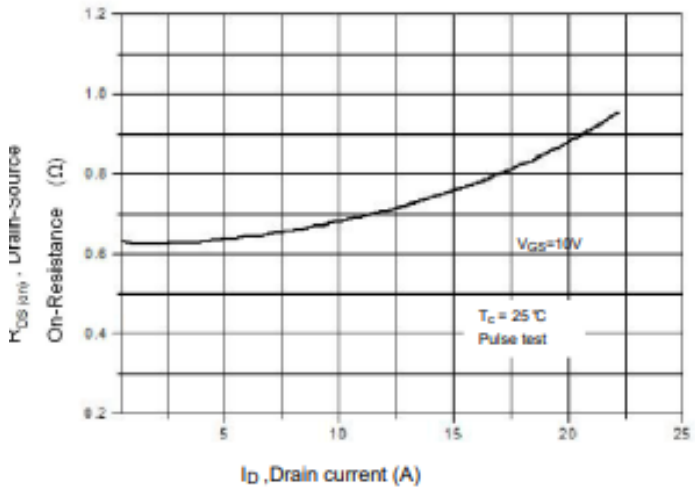


Figure 4. Threshold Voltage vs. Temperature

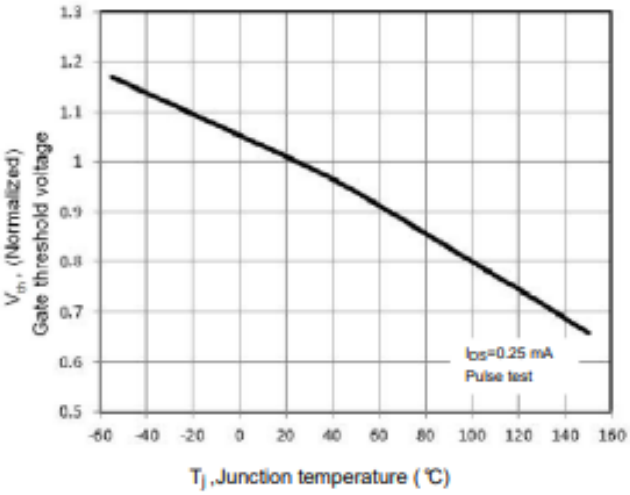


Figure 5. Breakdown Voltage vs. Temperature

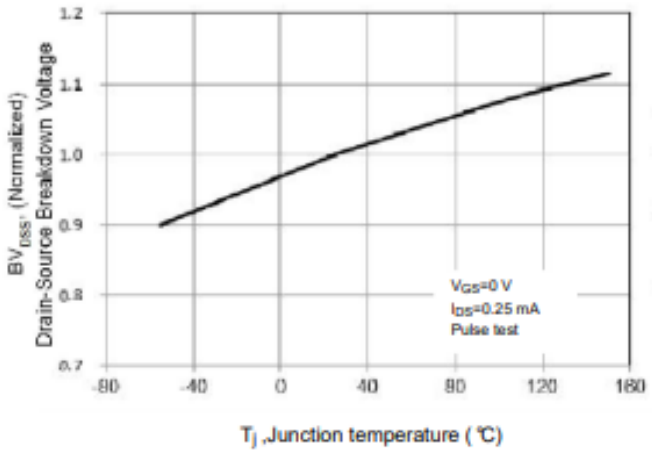


Figure 6. On-Resistance vs. Temperature

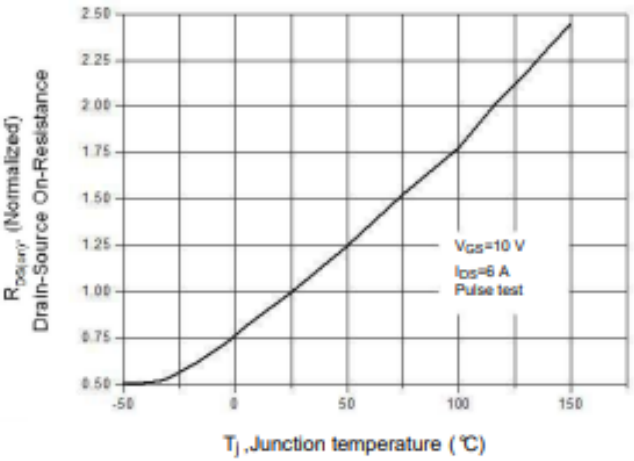


Figure 7. Capacitance Characteristics

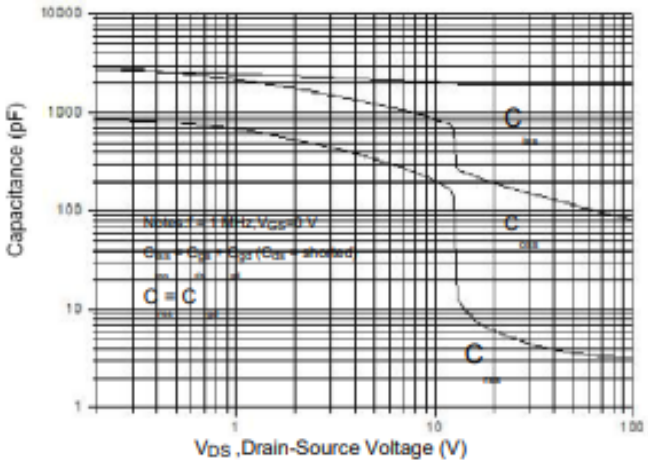


Figure 8. Gate Charge Characteristics

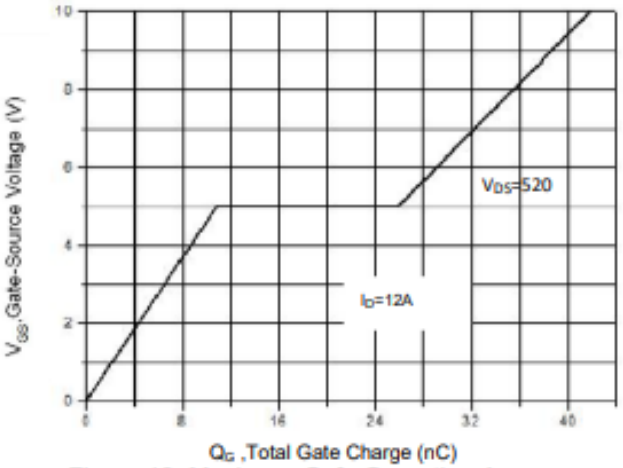


Figure 9. Maximum Safe Operating Area TO-220F/TO-220F Narrow Pin

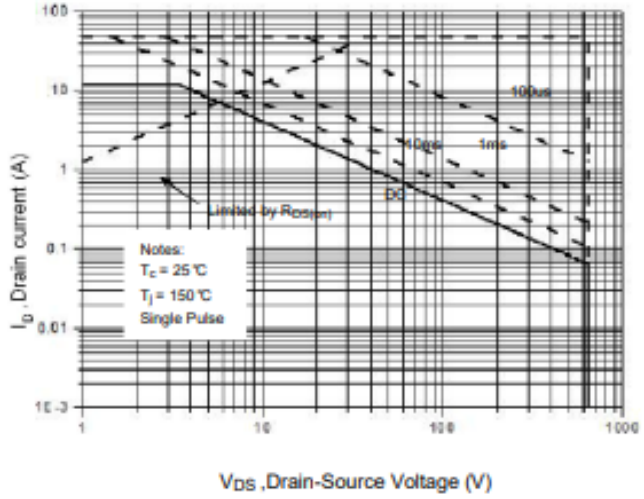


Figure 10. Maximum Safe Operating Area TO-220/ TO-262/TO-263

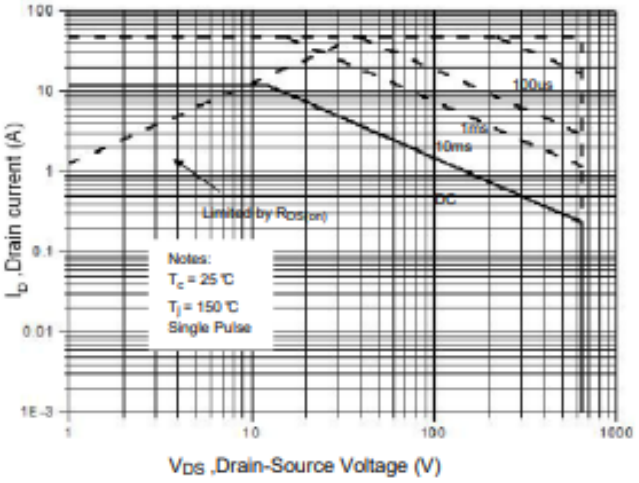


Figure 11. Power Dissipation vs. Temperature TO-220F/TO-220F Narrow Pin

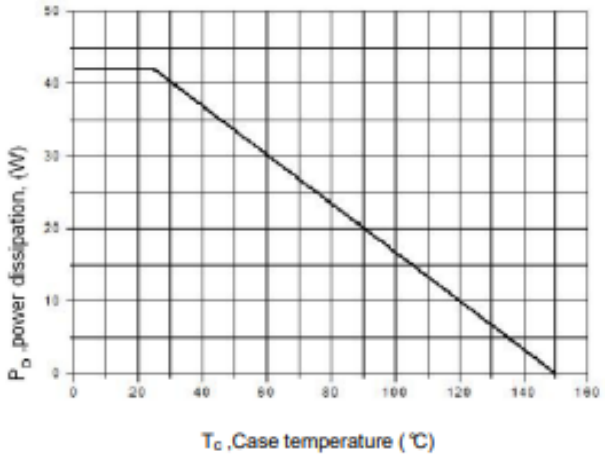


Figure 12. Power Dissipation vs. Temperature TO-220/ TO-262/TO-263

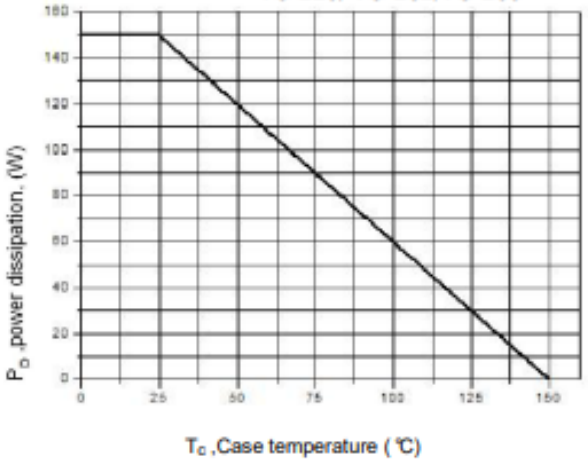


Figure 13. Continuous Drain Current vs. Temperature

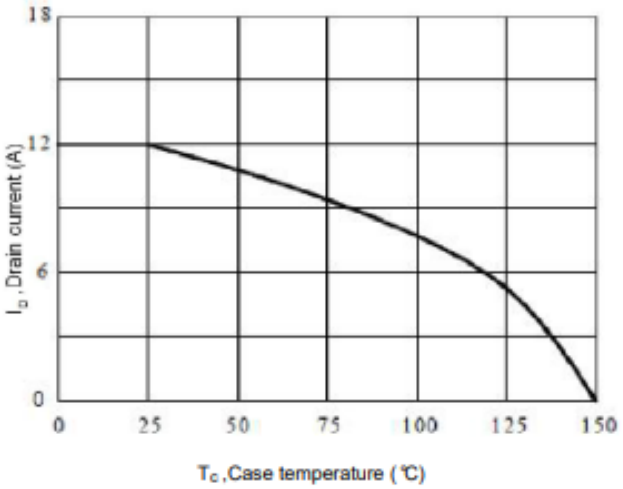


Figure 14. Body Diode Transfer Characteristics

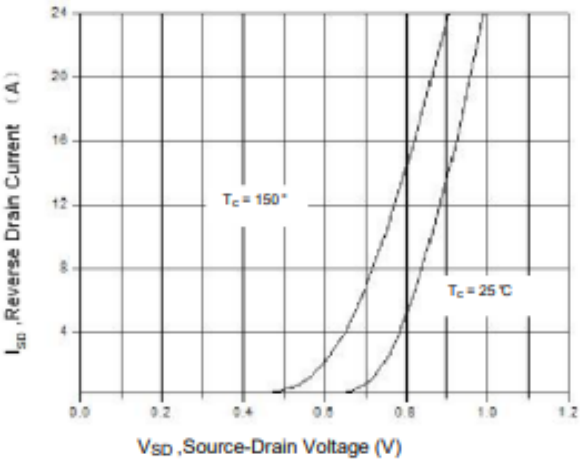


Figure 15 Transient Thermal Impedance, Junction to Case, TO-220F/TO-220F Narrow Pin

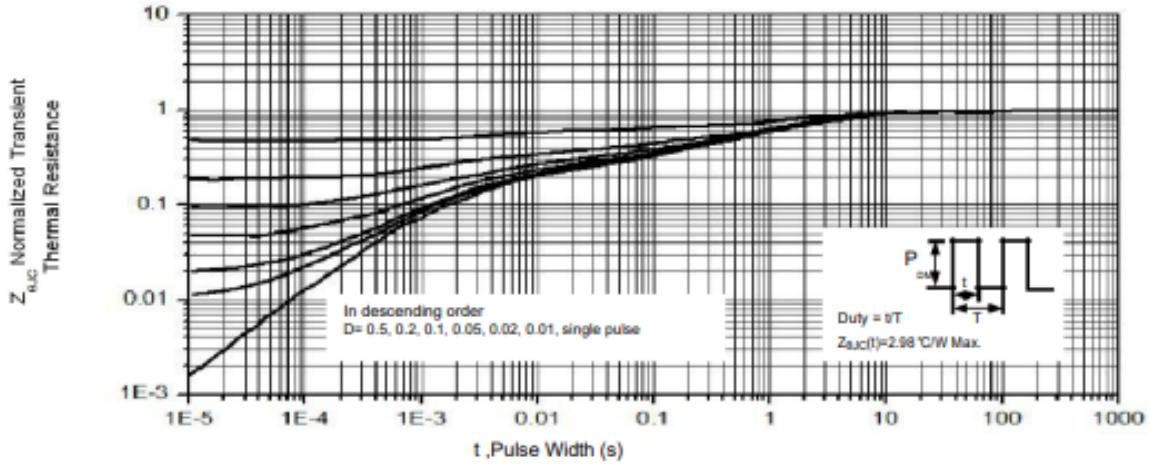
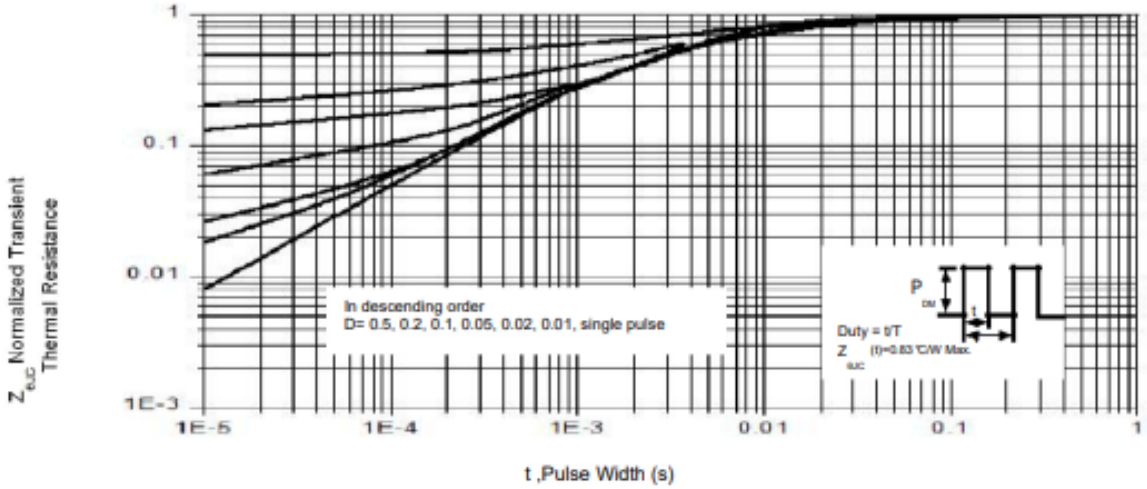
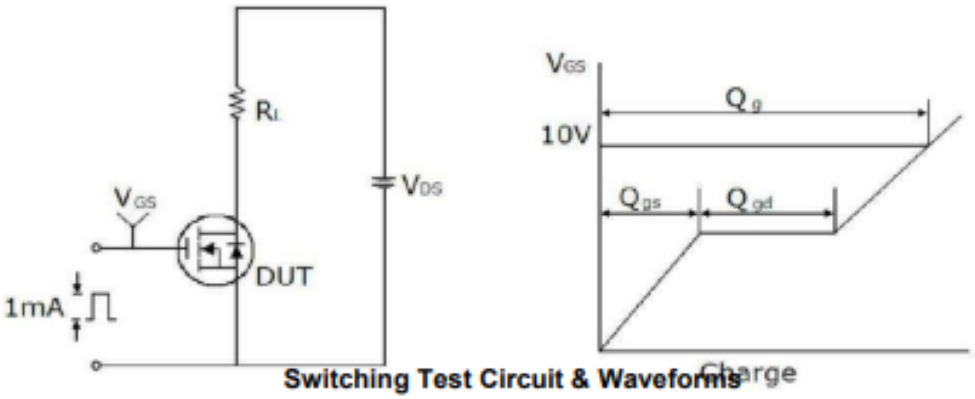


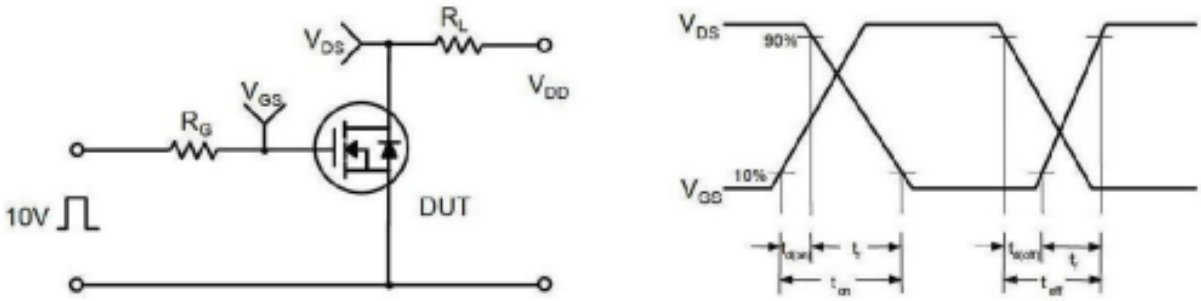
Figure 16. Transient Thermal Impedance, Junction to Case, TO-220/ TO-262/TO-263



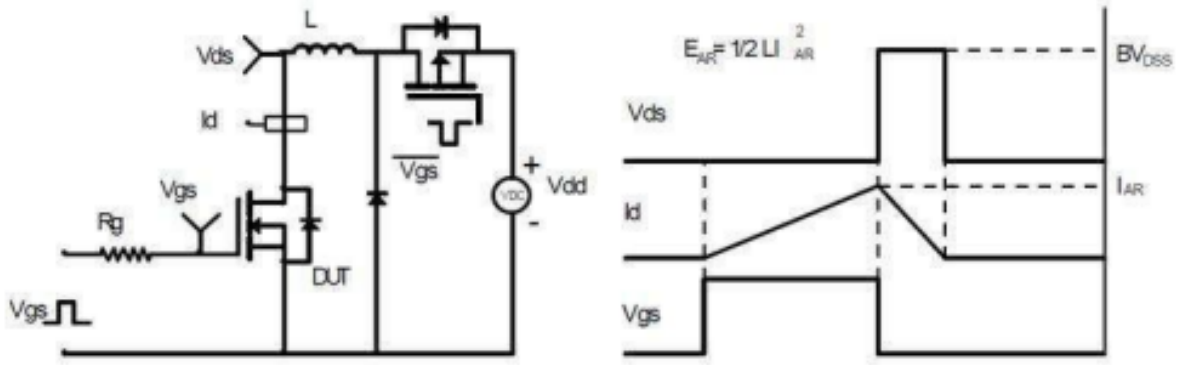
Test Circuit



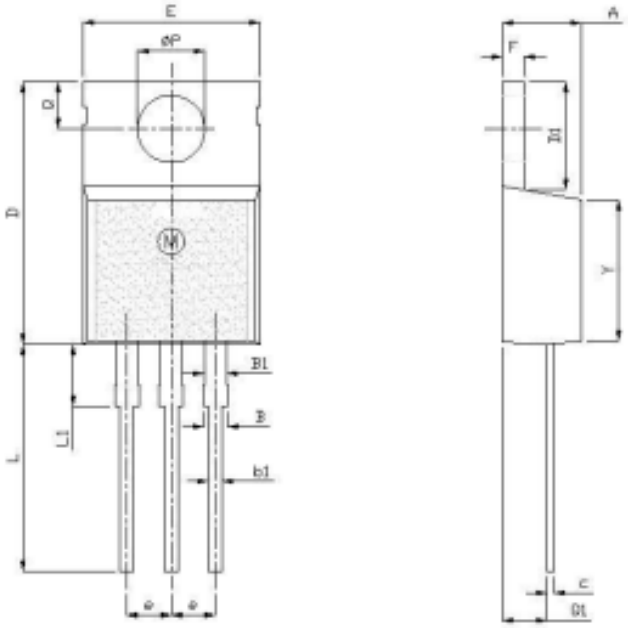
Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



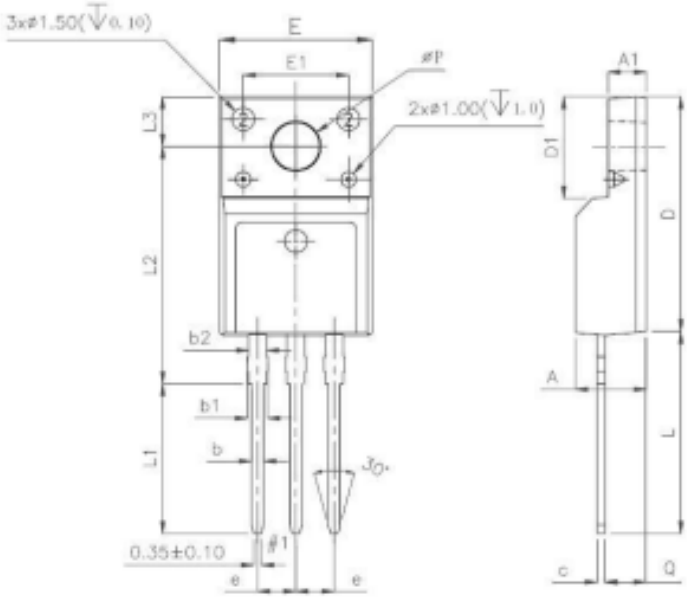
Package Mechanical Data-TO-220



UNIT：mm

SYMBOL	MIN	NOM	MAX
A	4		4.8
B	1.2		1.4
B1	1		1.4
b1	0.75		0.95
c	0.4		0.55
D	15		16.5
D1	5.9		6.9
E	9.9		10.7
e	2.44	2.54	2.64
F	1.1		1.4
L	12.5		14.5
L1	3	3.5	4
ΦP	3.7	3.8	3.9
Q	2.5		3
Q1	2		2.9
Y	8.02	8.12	8.22

Package Mechanical Data-TO-220F



UNIT：mm

SYMBOL	MIN	NOM	MAX
A	4.5		4.9
A1	2.3		2.9
b	0.65		0.9
b1	1.1		1.7
b2	1.2		1.4
c	0.35		0.65
D	14.5		16.5
D1	6.1		6.9
E	9.6		10.3
E1	6.5	7	7.5
e	2.44	2.54	2.64
L	12.5		14.3
L1	9.45		10.05
L2	15		16
L3	3.2		4.4
ΦP	3		3.3
Q	2.5		2.9

Product Naming Rules