ID	$R_{DS}(ON)(Typ)$	VDSS
22A	130mΩ	600V

Applications:

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- AC-DC Switching Power Supply

Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
- Built-in ESD Diode

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RSE60R150F	TO-220F	RSE60R150F	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RSE60R150F	Units
VDSS	Drain-to-Source Voltage	600	V
ID	Continuous Drain Current TC=25℃	22	A
ID	Continuous Drain Current TC=100℃	13.5	A
IDM	Pulsed Drain Current (Note*1)	66	A
PD	Power Dissipation	34	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy IAS=2.75A,VDD = 50V, RG = 25 Ω，TC=25℃	330	mJ
dv/dt	MOSFET dv/ dt ruggedness VDS = 0...400V	50	V/ns
dv/dt	Reverse diode dv/dt VDS = 0...400V, Tj = 25℃, ISD≤ID	15	V/ns
VESD(G-S)	Gate source ESD(HBM-C=100pF, R=1.5KΩ)	2000	V
TL TPKG	Maximum Temperature for Soldering Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	300 260	℃
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	℃

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the" Absolute Maximum Ratings" Table may cause permanent   damage to the device.
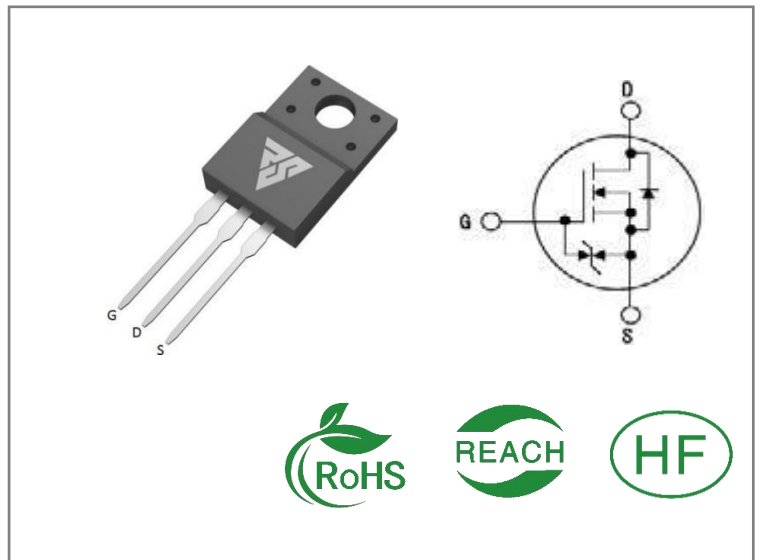
Thermal Resistance

Symbol	Parameter	RSE60R150F	Units	Test Conditions
RθJC	Junction-to-Case	3.71	℃/W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	80		1 cubic foot chamber,free air.

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	600	--	--	V	VGS=0V,ID=1mA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=600V,VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	1	μA	VGS=20V ,VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-1		VGS=-20V ,VDS=0V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	130	150	mΩ	VGS=10V,ID=11A
VGS(TH)	Gate Threshold Voltage	2	--	4	V	VGS=VDS,ID=850μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	45	--	nS	VDS=300V ID=11A RG=25Ω
trise	Rise Time	--	23	--		
td(OFF)	Turn- OFF Delay Time	--	201	--		
tfall	Fall Time	--	18	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2180	--	pF	VGS=0V VDS=400V f=1.0MHz
Coss	Output Capacitance	--	50	--		
Crss	Reverse Transfer Capacitance	--	2.6	--		
Qg	Total Gate Charge	--	50	--	nC	VDS=480V ID=11A VGS=10V
Qgs	Gate- to- Source Charge	--	10	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	14	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	22	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	66	A	
VSD	Diode Forward Voltage	--	--	1.3	V	IS=11A,VGS=0V
trr	Reverse Recovery Time	--	370	--	nS	VR=400V IS=11A,di/dt=100A /μs
Qrr	Reverse Recovery Charge	--	5.0	--	μC	

Notes:

* 1. Repetitive rating; pulse width limited by maximum junction temperature.

* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%

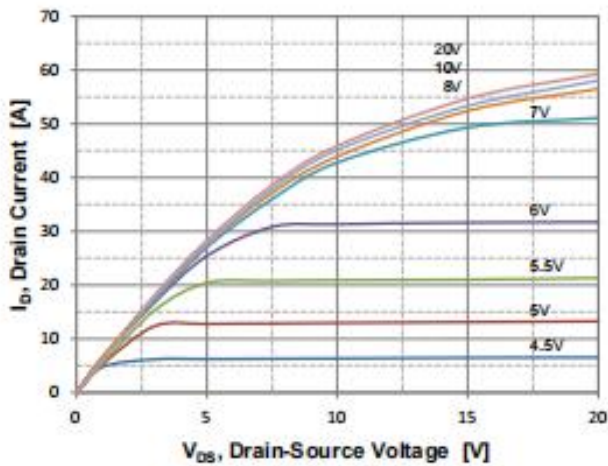## Typical Feature Curve

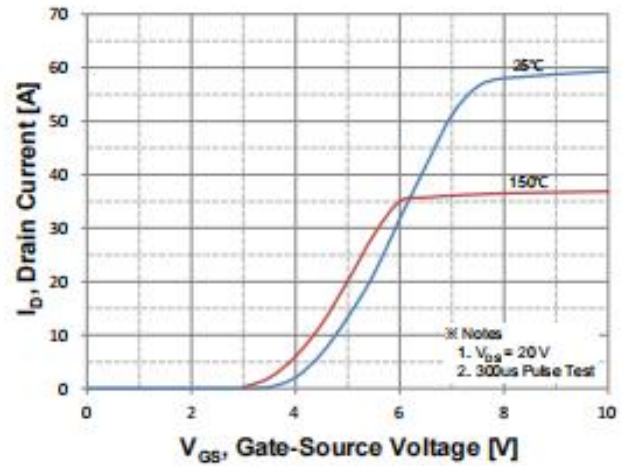Figure 1. On Region Characteristics
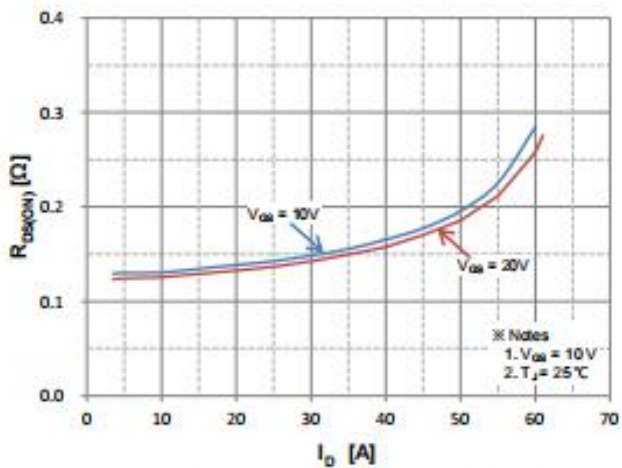

Figure 2. Transfer Characteristics

Figure 3. On Resistance Variation vs
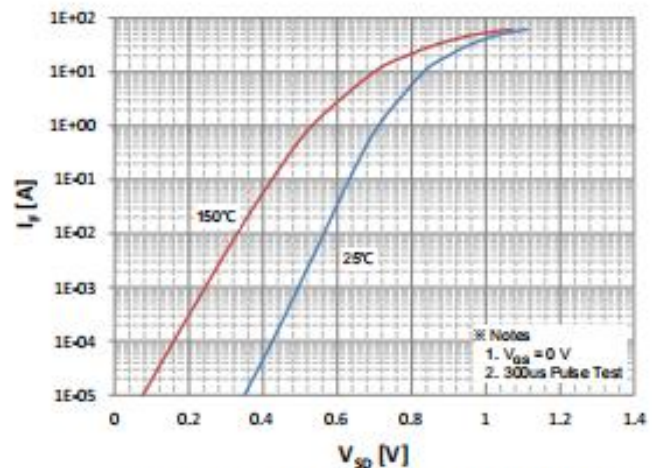Drain Current and Gate Voltage

Figure 4. Body Diode Forward Voltage
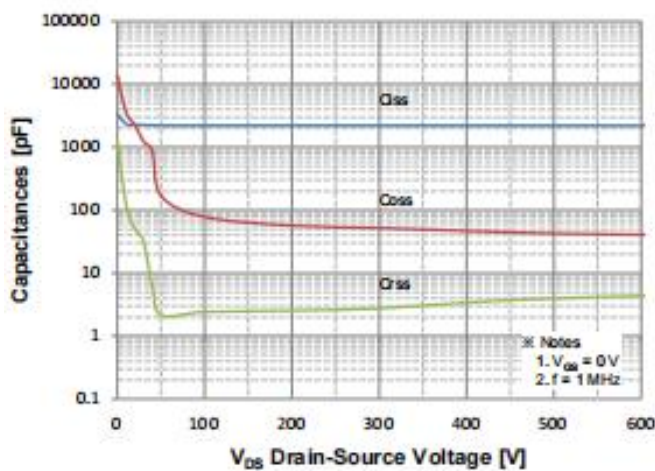Variation with Source Current
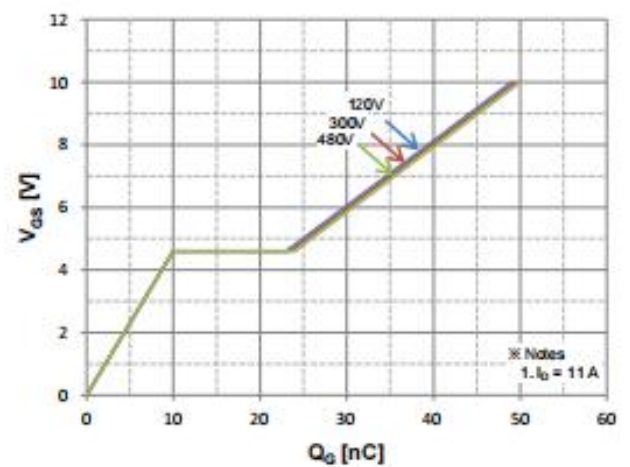and Temperature

Figure 5. Capacitance Characteristics
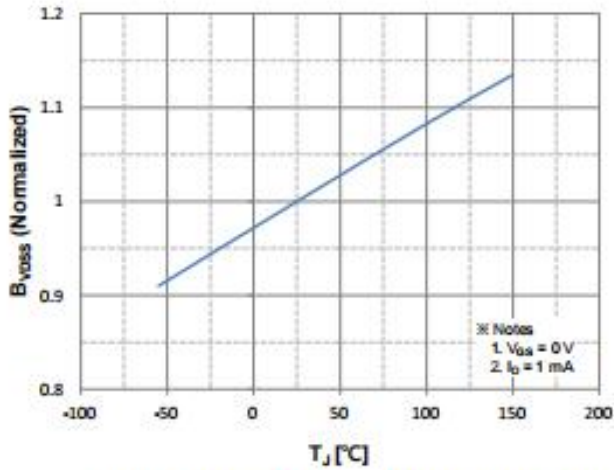

Figure 6. Gate Charge Characteristics

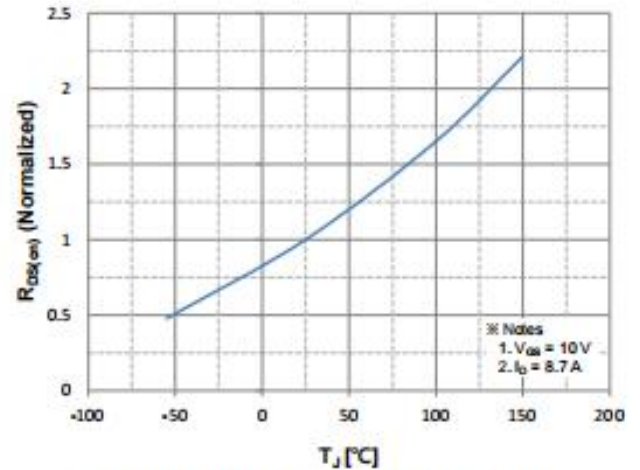Figure 7. Breakdown Voltage Variation
vs. Temperature

Figure 8. On-Resistance Variation
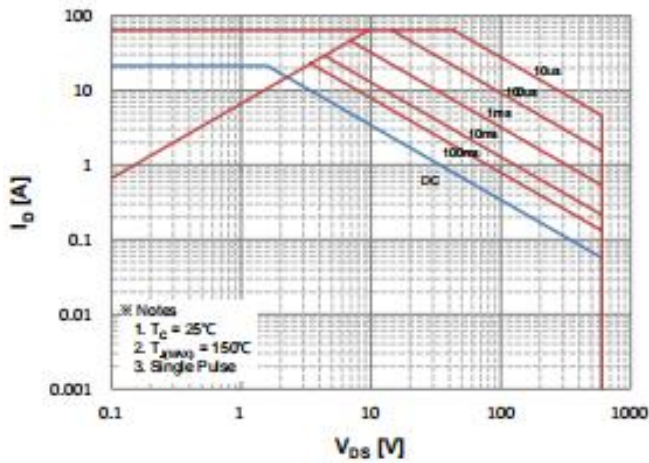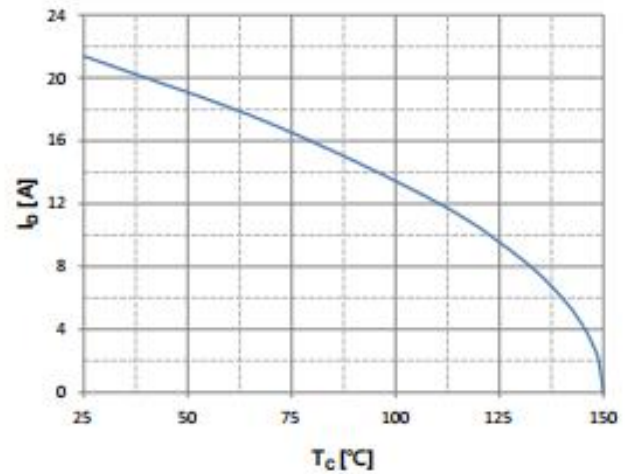vs. Temperature

Figure 9. Maximum Safe Operating Area

Figure 10. Maximum Drain Current
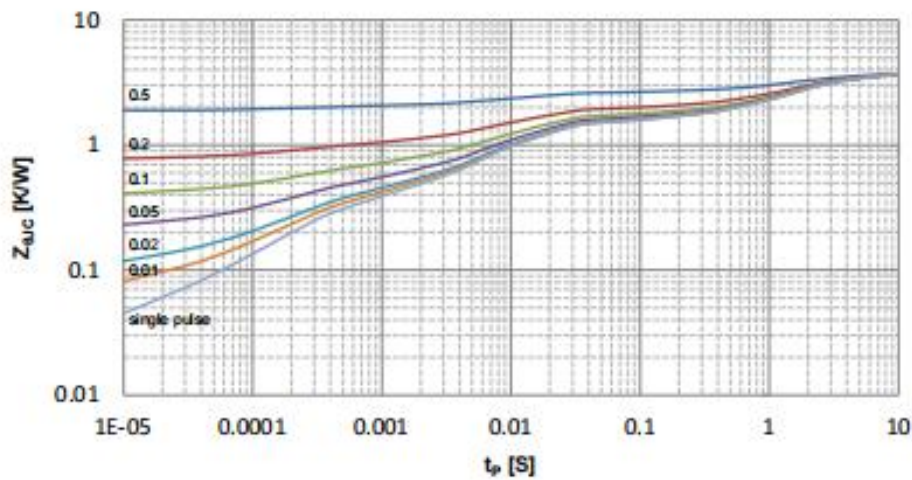vs. Case Temperature

Figure 11. Transient Thermal Response Curve

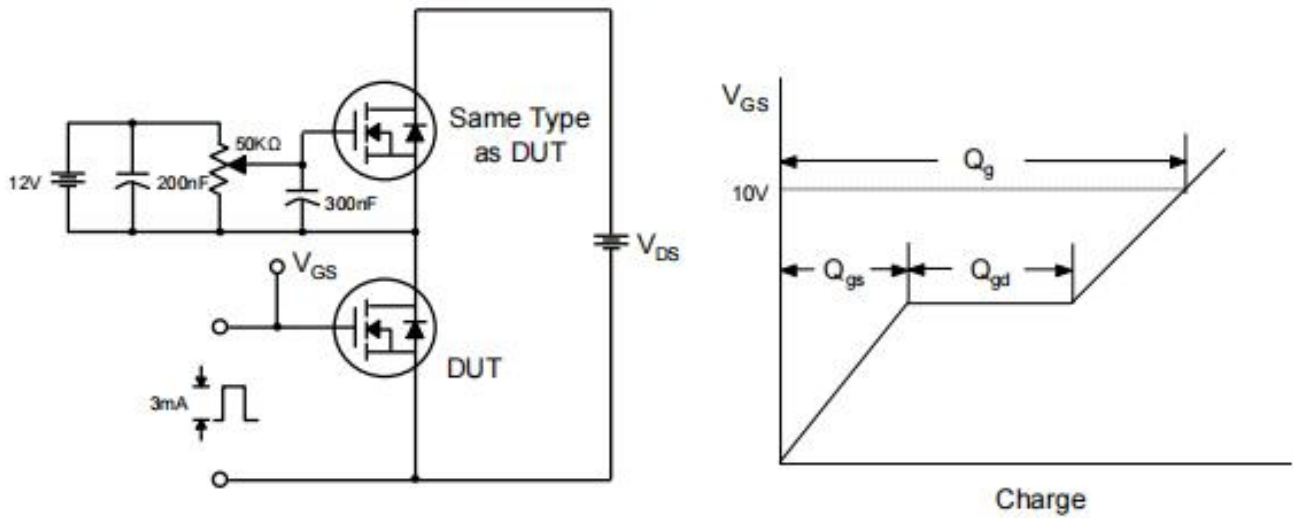## Test Circuits and Waveforms

Fig 12. Gate Charge Test Circuit & Waveform

Fig 13. Resistive Switching Test Circuit & Waveforms
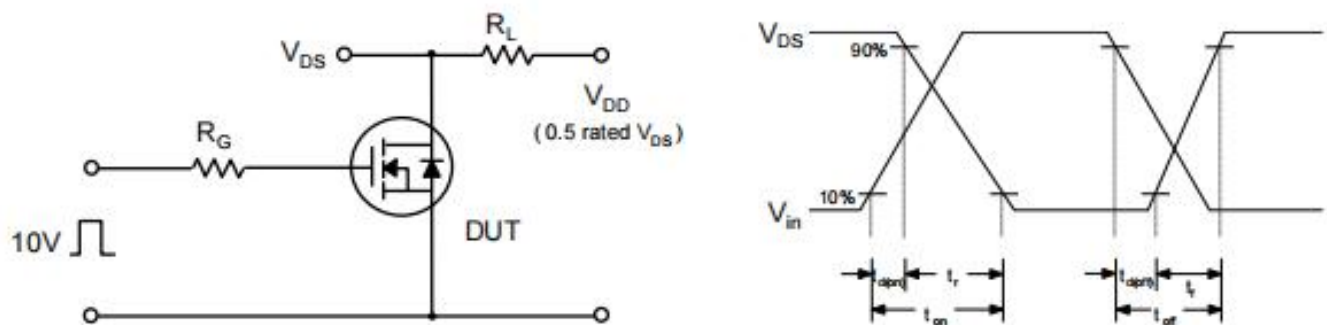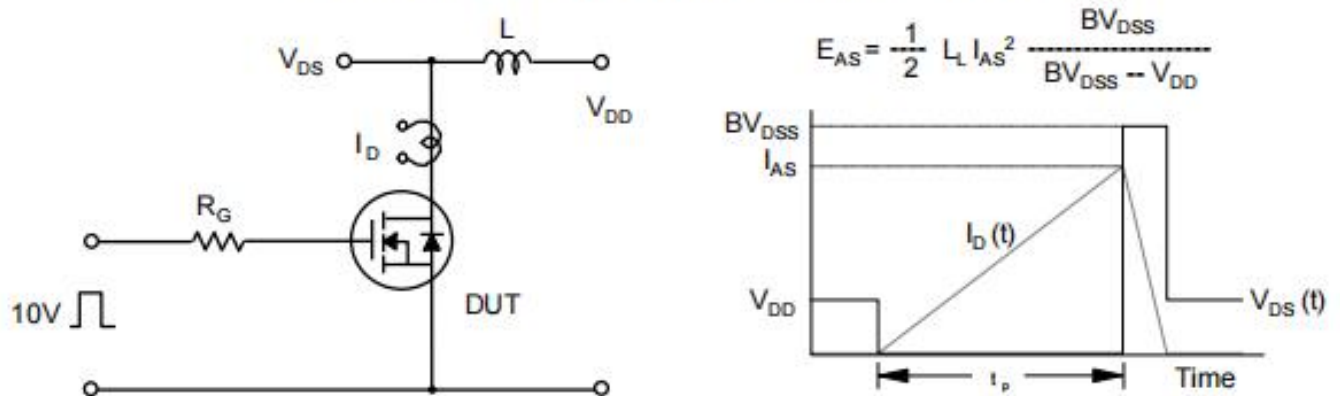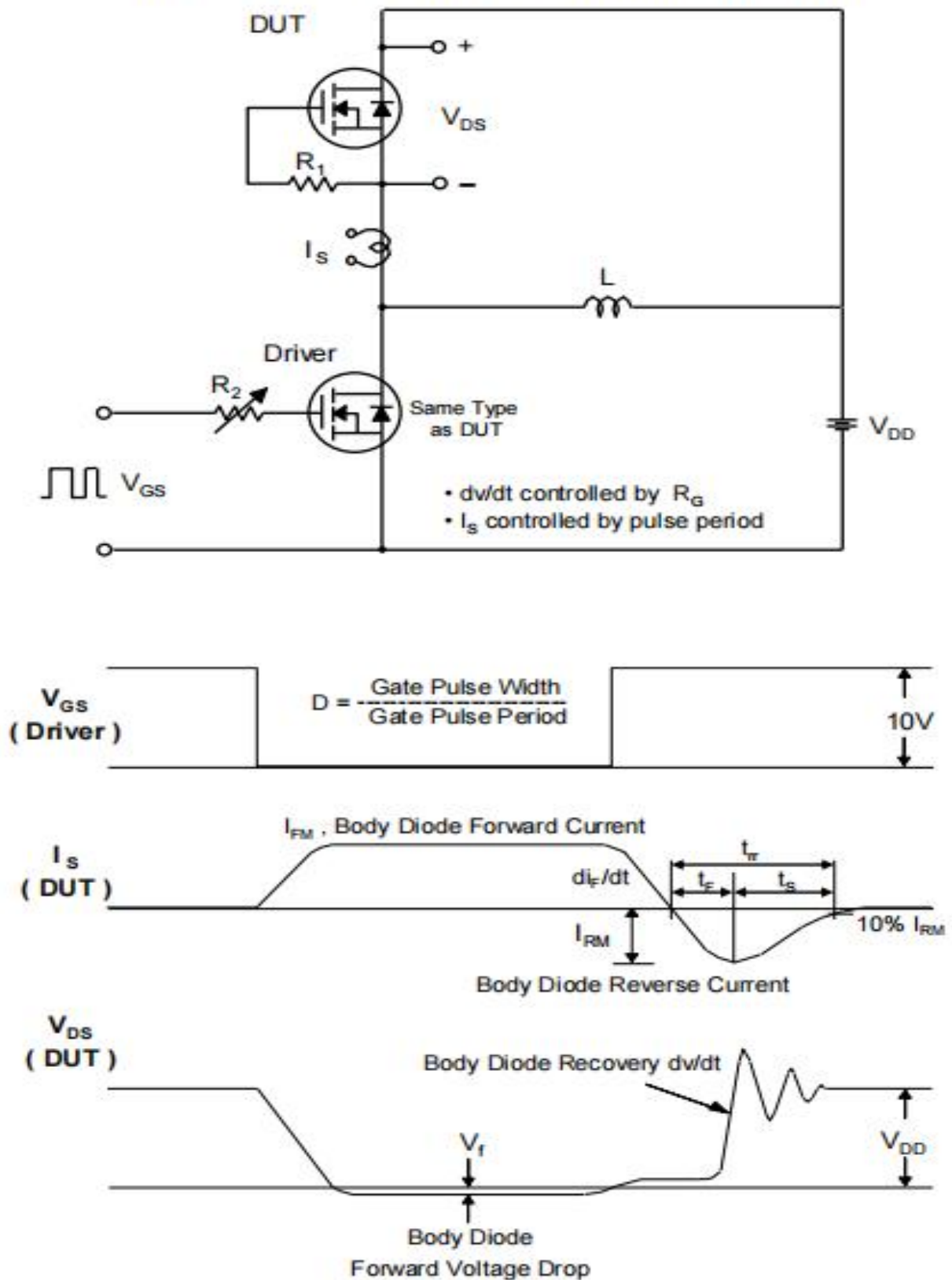

Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms

$$E_{AS} = \frac{1}{2} L_L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

Test Circuits and Waveforms

Fig 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms

Package outline drawing(TO-220F Unit: mm)

Dim.	Min.	Max.
A	9.95	10.36
A1	4.5	5.0
B	2.95	3.25
C	1.25	1.45
D	12.60	13.60
E	0.40	0.60
F	2.8	3.5
G	1.30	1.45
H	(2.54)	
I	(5.08)	
J	4.60	4.75
K	2.45	2.65
L	6.5	6.8
M	15.4	16.0
N	2.25	3.05
O	0.45	0.55
P	0.70	0.90
All Dimensions in millimeter		

外形一

Dim.	Min.	Max.
W	9.95	10.36
W1	(2.54)	
W2	0.70	0.90
W3	1.25	1.47
L	15.67	16.07
L1	6.48	6.88
L2	3.2	3.4
L3	12.6	13.6
L4	(3.23)	
T	4.50	4.90
T1	2.34	2.74
T2	2.25	2.95
T3	0.45	0.60
T4	(0.70)	
G	3.08	3.28
All Dimensions in millimeter		

外形二
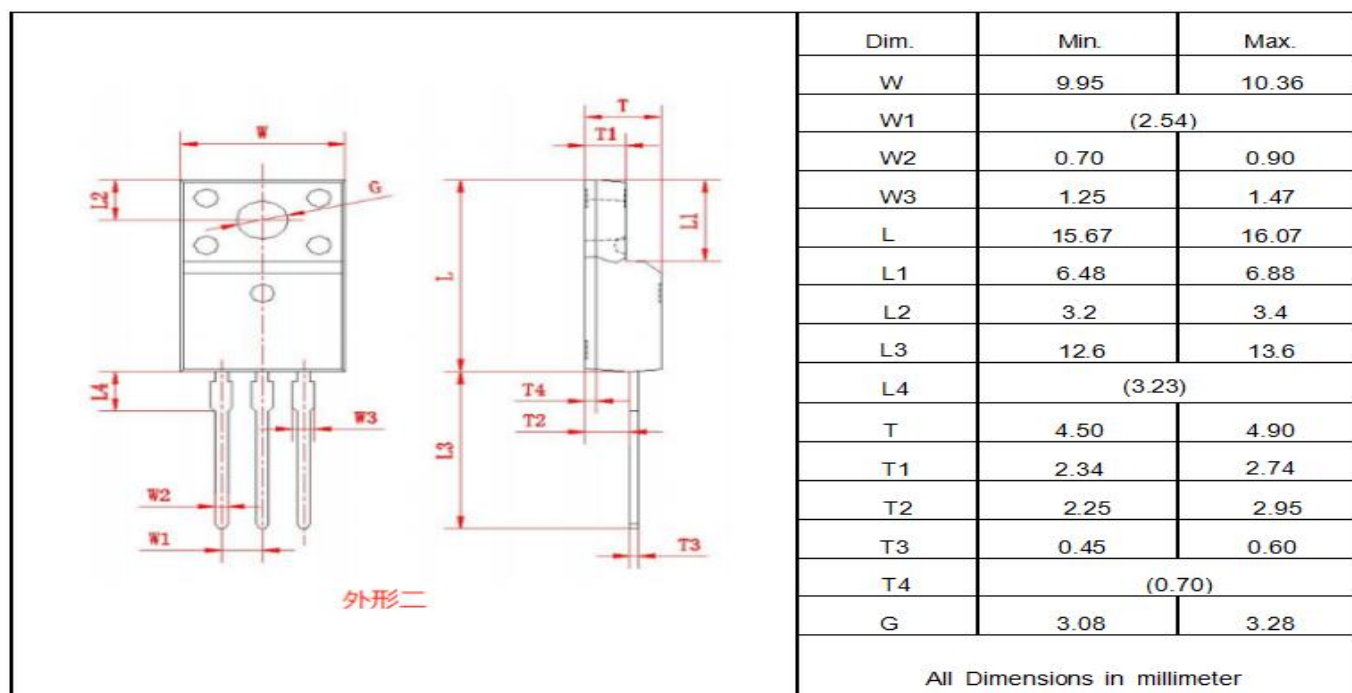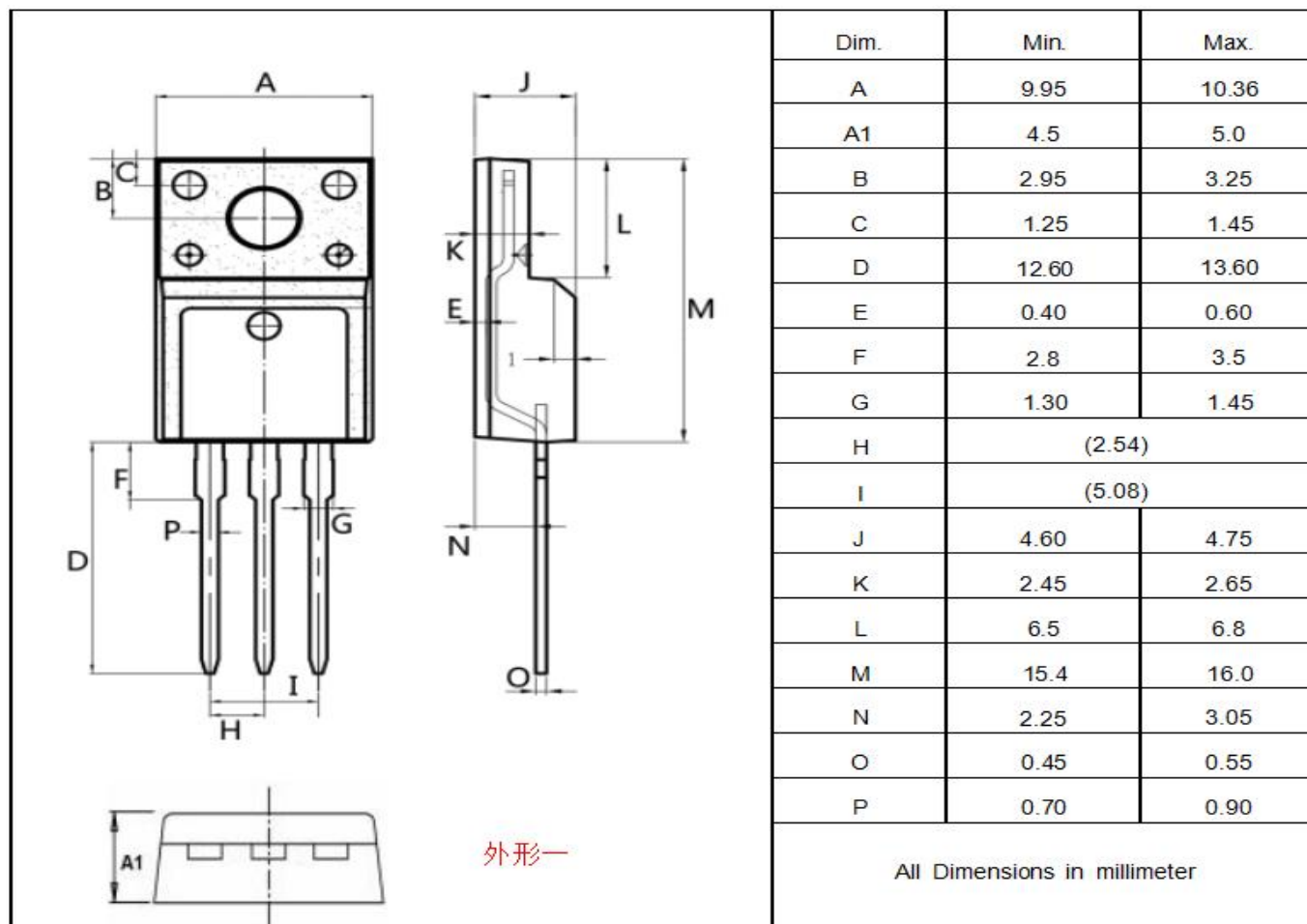
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