Feature

- High density cell design for lower Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

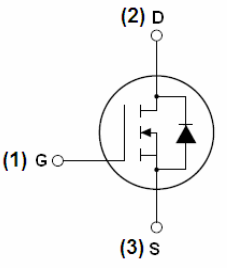
Application

- Power switching application
- Hard switched and High frequency circuits
- Uninterruptible power supply

Product Summary

V_{DS}	100	V
$R_{DS(on),Typ}$@ V_{GS}=10V	32	mΩ
I_D	33	A

TO-220



Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	33	A
Drain Current-Pulsed (Note 1)	I_{DM}	132	A
Maximum Power Dissipation(Tc=25℃)	P_D	70	W
Single pulse avalanche energy(Note 2)	E_{AS}	96	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.4	℃/W
Thermal Resistance,Junction-to-Ambient(PCB mount)	$R_{\theta JA}$	62	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	1.6	2.4	V
Drain-Source On-State Resistance(Note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=12A	-	32	35	mΩ
		V_{GS}=4.5V, I_D=12A	-	33	45	
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=15A	-	11	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=25V,V_{GS}=0V, f=1.0MHz	-	2160	-	pF
Output Capacitance	C_{oss}		-	202	-	pF
Reverse Transfer Capacitance	C_{rss}		-	183	-	pF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V, ID=20A, V_{GS}=10V,R_{GEN}=10Ω	-	29	-	nS
Turn-on Rise Time	t_r		-	13	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	58.2	-	nS
Turn-Off Fall Time	t_f		-	13.4	-	nS
Total Gate Charge	Q_g	V_{DS}=80V,I_D=20A V_{GS}=10V	-	55	-	nC
Gate-Source Charge	Q_{gs}		-	15	-	nC
Gate-Drain Charge	Q_{gd}		-	20	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=20A	-	-	1.2	V
Reverse Recovery Time	T_{rr}	Tj=25℃，IF=10A，di/dt=100A/uS〈note3〉	-	58	-	nS
Reverse Recovery Charge	Q_{rr}		-	110	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. E_{AS} condition :T_j=25℃,V_{DD}=50V,V_{GS}=10V,L=0.5mH,Rg=25Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

Characteristics Curves

Figure 1 Output Characteristics

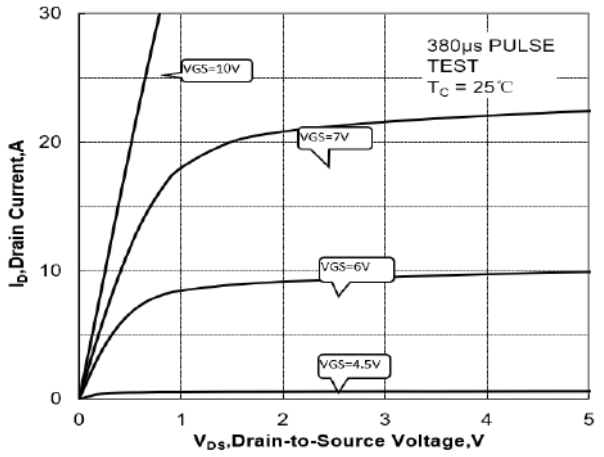


Figure 2 Transfer Characteristics

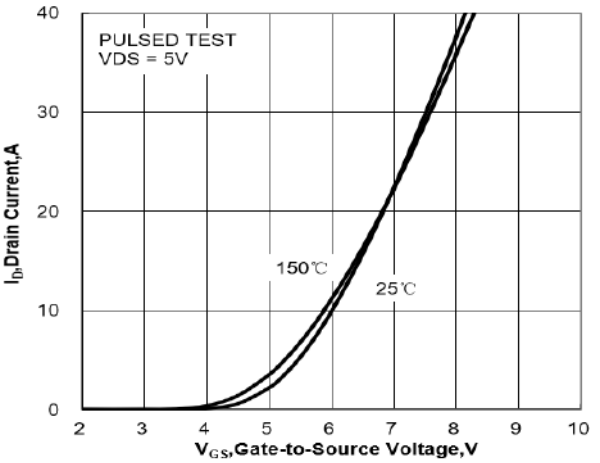


Figure 3 On-Resistance vs. I_D and V_{GS}

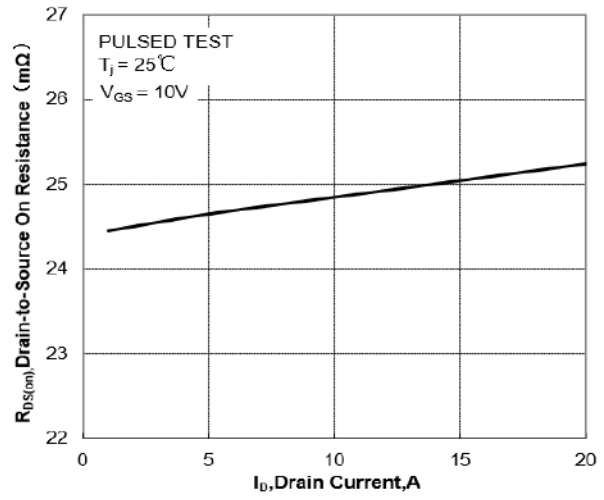


Figure 4 On-Resistance vs. Junction Temperature

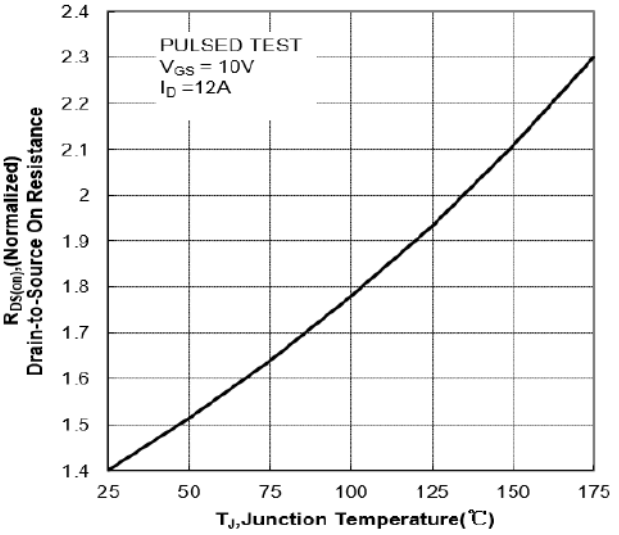


Figure 5 On-Resistance vs. V_{GS}

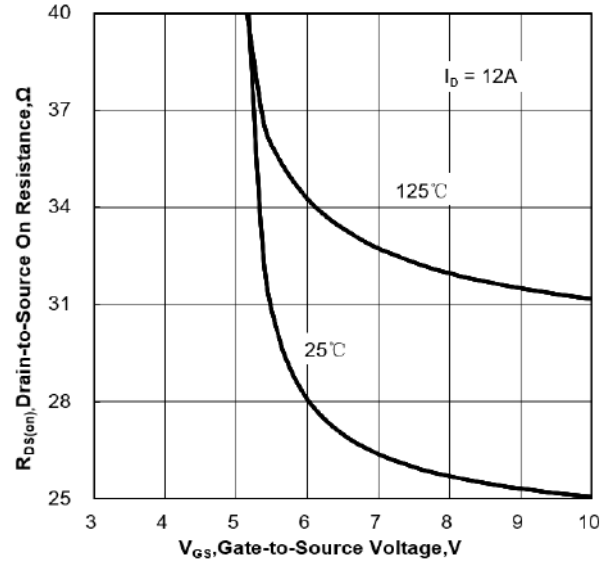


Figure 6 Body Diode Forward Voltage

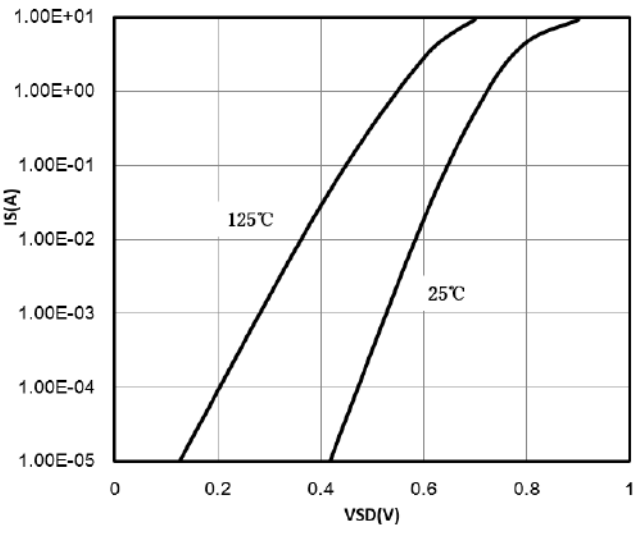


Figure 7 Gate-Charge Characteristics

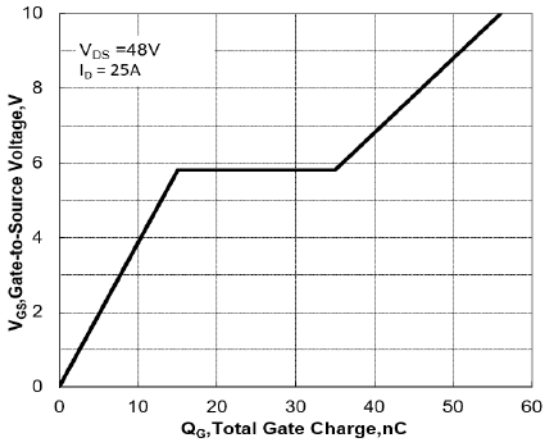


Figure 8 Capacitance Characteristics

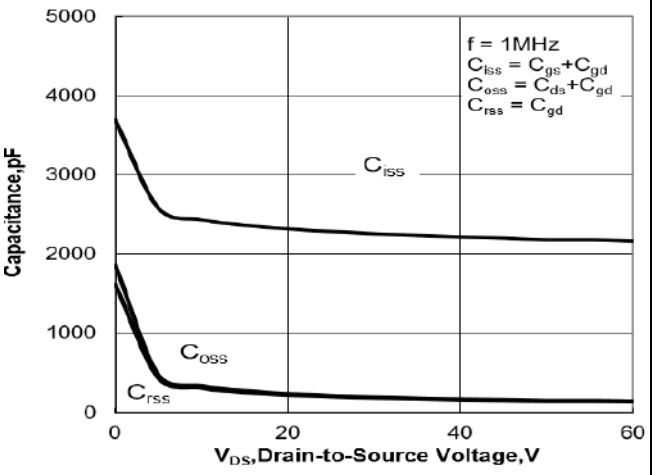


Figure 9 Maximum Forward Biased Safe Operation Area

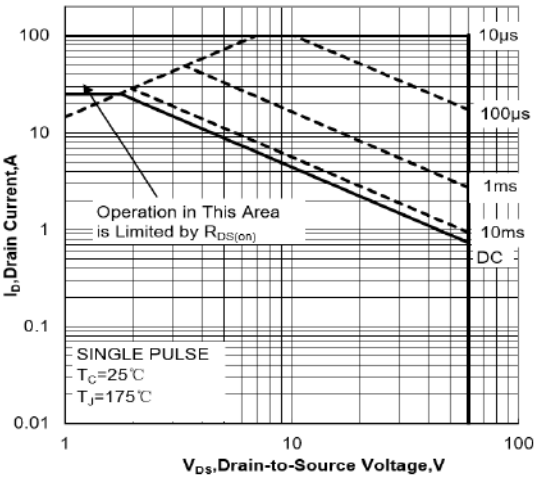


Figure 10 Single Pulse Power Rating Junction-to-Ambient

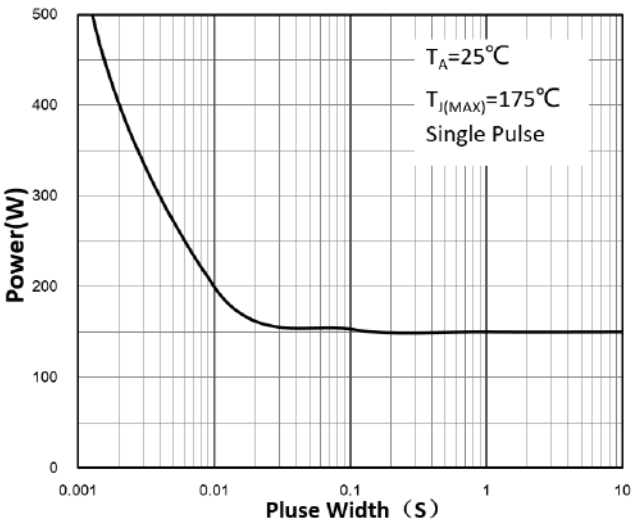
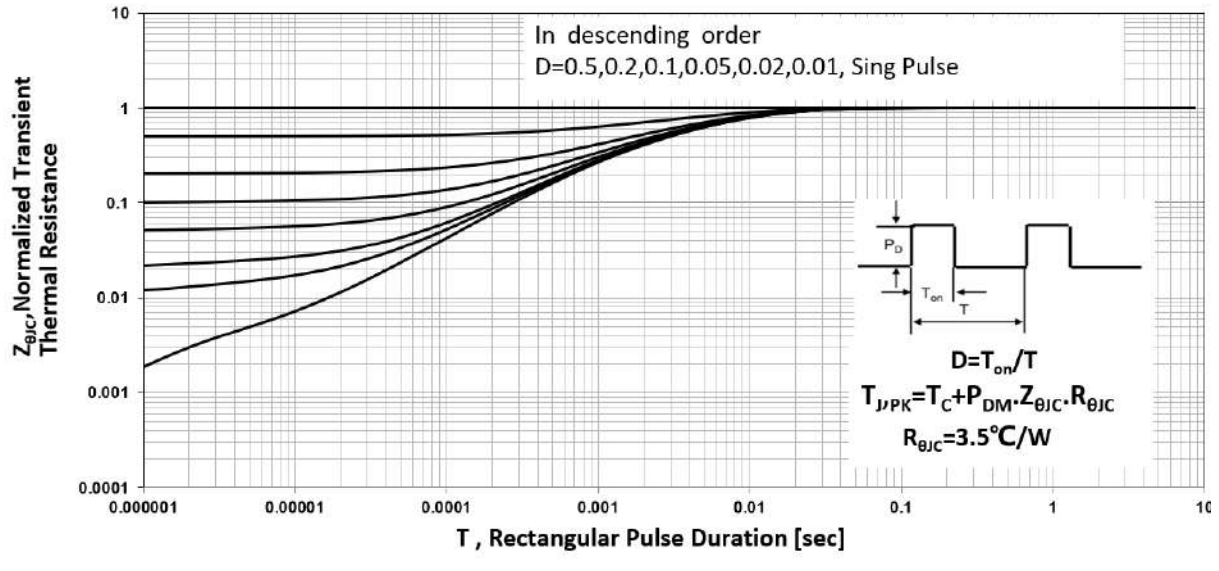
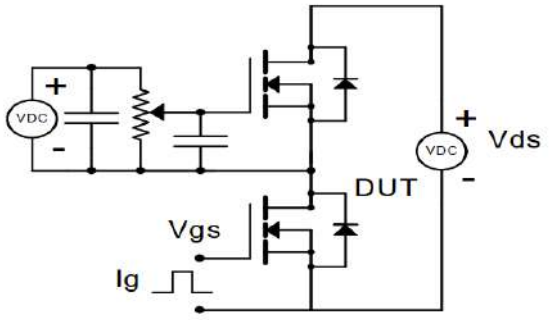
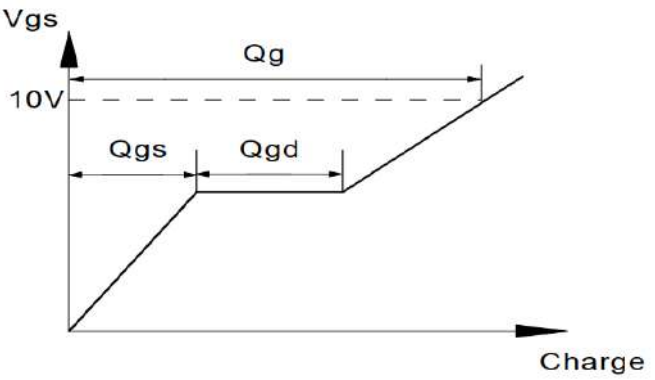
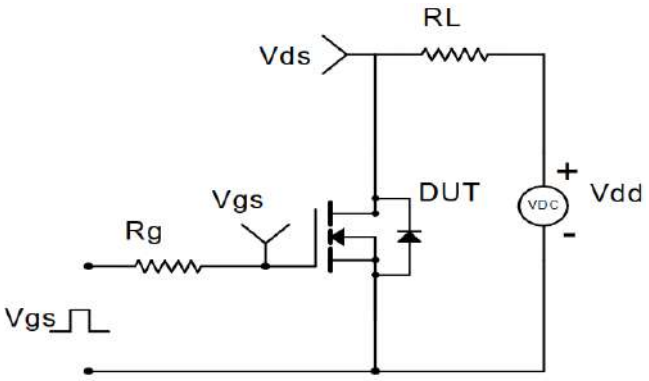
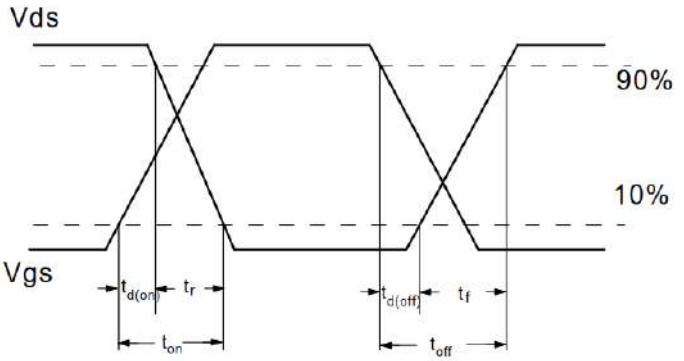
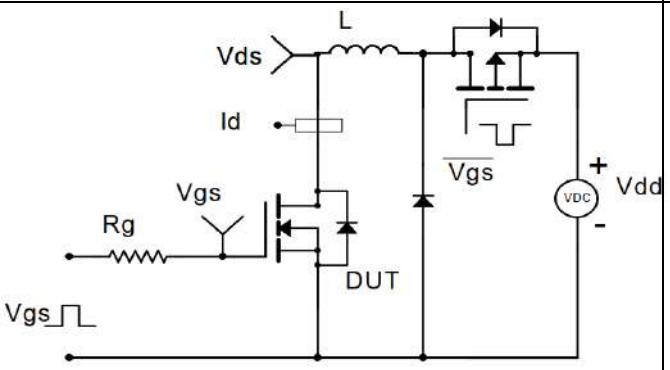
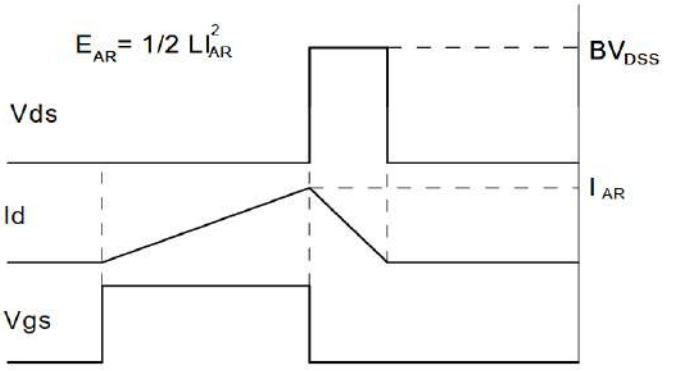
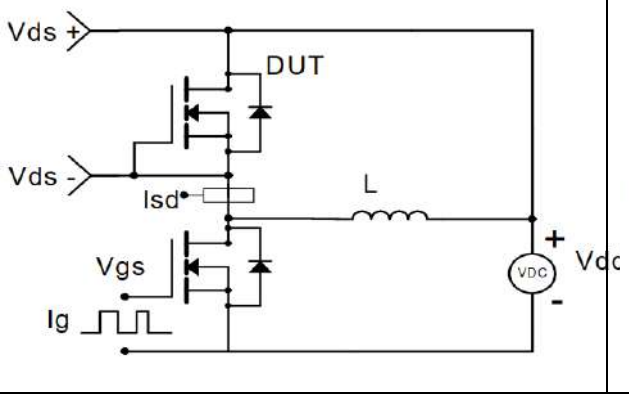
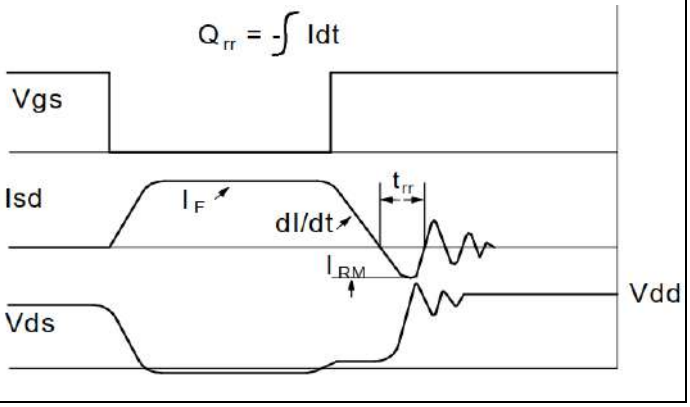


Figure 11 Normalized Maximum Transient Thermal Impedance

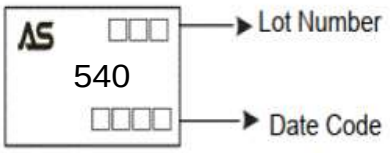


Test Circuit and Waveform

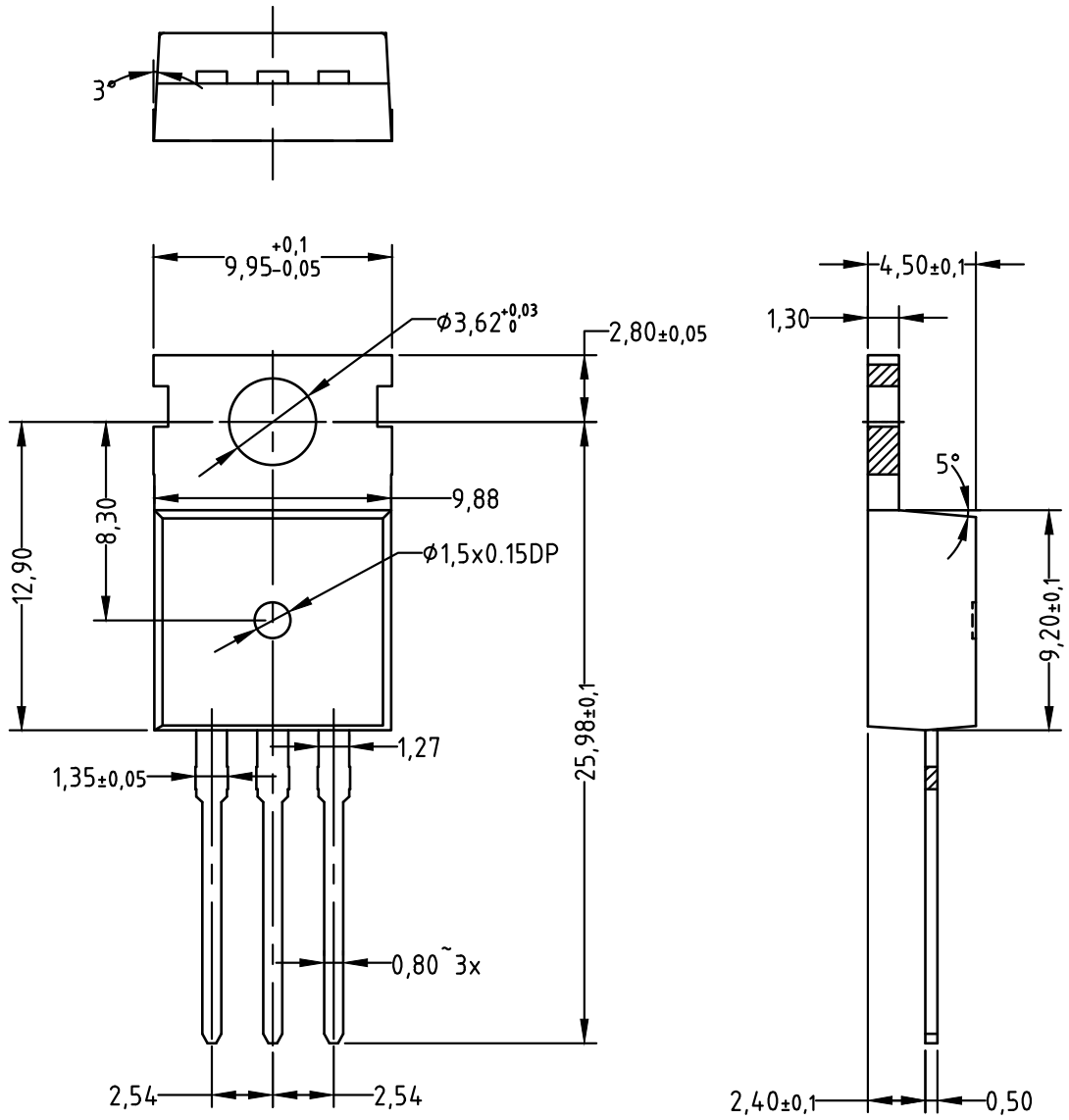
Gate Charge Test Circuit	Gate Charge Test Waveform
	
Resistive Switching Test Circuit	**Resistive Switching Test Waveforms**
	
Unclamped Inductive Switching (UIS) Test Circuit	**Unclamped Inductive Switching (UIS) Test Waveforms**
	
Diode Recovery Test Circuit	**Diode Recovery Test Waveforms**
	

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM540P-T	540	TO-220	Tube	50/Tube

PACKAGE	MARKING
TO-220	

TO-220


3°
9,95+0,1-0,05
ϕ3,62+0,03 0
2,80±0,05
12,90
8,30
9,88
ϕ1,5x0.15DP
1,27
1,35±0,05
25,98±0,1
0,80~3x
2,54
2,54
4,50±0,1
1,30
5°
9,20±0,1
2,40±0,1
0,50

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