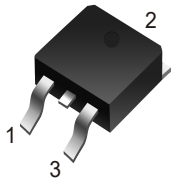
WGD14P06

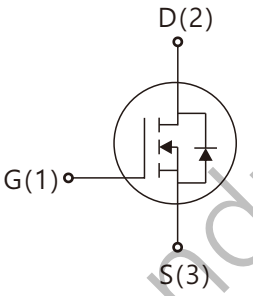
TO-252

RoHS COMPLIANT



Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 31.0nC (Typ.).
- ☐ BVDSS=-60V ,I_D=-14A
- ☐ R_{DS}(on) :80m Ω(Max) @V_{GS} =-10V
- ☐ 100% Avalanche Tested



1.Gate (G)
2.Drain (D)
3.Source (S)

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

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		-60	V
I_D	Drain Current	T_C=25℃	-14	A
		T_C=100℃	-7.9	
$V_{GS(TH)}$	Gate Threshold Voltage		±20	V
E_{AS}	Single Pulse Avalanche Energy (note1)		50	mJ
I_{AR}	Avalanche Current (note2)		−14	A
P_D	Power Dissipation (Tj=25℃)		45	W
T_j	Junction Temperature(Max)		150	℃
T_{stg}	Storage Temperature		-55~+150	℃
TL	Maximum lead temperature for soldering purpose,1/8' from case for 5 seconds		300	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance,Junction to Case	-	2.8	℃/W
$R_{\theta JA}$	Thermal Resistance,Junc tion to Ambient	-	62.5	℃/W

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Electrical Characteristics (Ta=25 ℃ unless other wise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA , V_{GS}=0	-60	-	-	V
△BVDSS/ △TJ	Breakdown Voltage Temperature Coefficient	I_D=250μA ,Reference to 25℃		0.25	-	V/℃
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-60V, V_{GS}=0V	-	-	1	μA
		V_{DS}=-48V, Tc=125℃			10	
I_{GSSF}	Gate-body leakage Current, Forward	V_{GS}=+20V, V_{DS}=0V	-	-	100	nA
I_{GSSR}	Gate-body leakage Current, Reverse	V_{GS}=-20V, V_{DS}=0V	-	-	-100	nA
On Characteristics						
$V_{GS(TH)}$	Date Threshold Voltage	I_D=250μA,V_{DS}=V_{GS}	-1	-	-3	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	I_D=-14A,V_{GS}=-10V		75	80	mΩ
		I_D=-10A,V_{GS}=-4.5V		88	100	
Dynamic Characteristics						
Ciss	Input Capacitance	V_{DS}=-30V, V_{GS}=0 , f=1.0MHz	-	1330	-	pF
Coss	Output Capacitance		-	71	-	pF
Crss	Reverse Transfer Capacitance		-	7	-	pF
Switching Characteristics						
Td(on)	Turn-On Delay Time	V_{DD}=-30V , I_D=-10A R_G=1.5Ω (Note 3,4)		11		ns
Tr	Turn-On Rise Time			14		ns
Td(off)	Turn-Off Delay Time			33		ns
Tf	Turn-Off Rise Time			13		ns
Qg	Total Gate Charge	V_{DS}=-30V, V_{GS}=-10V, I_D=−12A (Note 3,4)		31		nC
Qgs	Gate-Source Charge			4.3		nC
Qgd	Gate-Drain Charge			7.2		nC
Drain-Source Diode Characteristics and Maximum Ratings						
Is	Diode Forward Current		-	-	-14	A
I_{SM}	Max. Pulsue Diode Forward Current	-		- -	65	A
V_{SD}	Diode Forward Voltage	I_D=−12A	-	-	1.5	V
Trr	Reverse Recovery Time	I_S=−12A,V_{GS}=0V diF/dt=100A/μs (Note3)		35		nS
Qrr	Reverse Recovery Charge		-	38	-	μC

Notes : 1, L=0.5mH, IAS=-12 A, VDD=-30V, RG=25Ω Starting TJ =25℃
2, Repetitive Rating : Pulse width limited by maximum junction temperature
3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
4, Essentially Independent of Operating Temperature

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Typical Characteristics

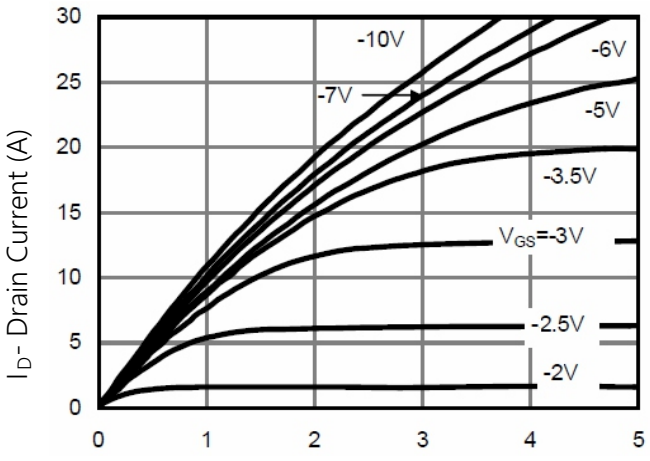

Figure 1 Output Characteristics

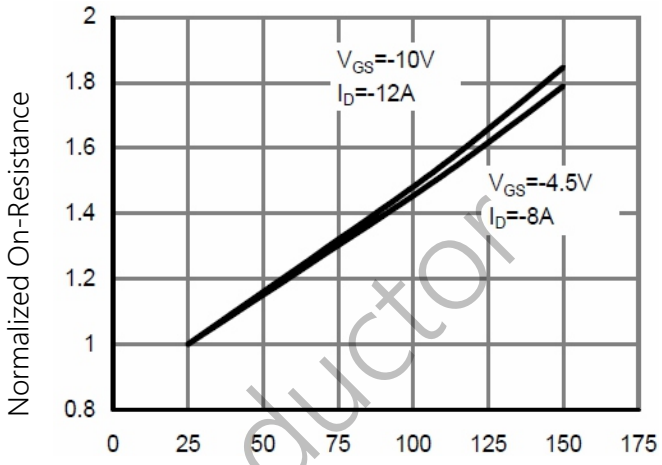

Figure 4 Rdson-Junction Temperature

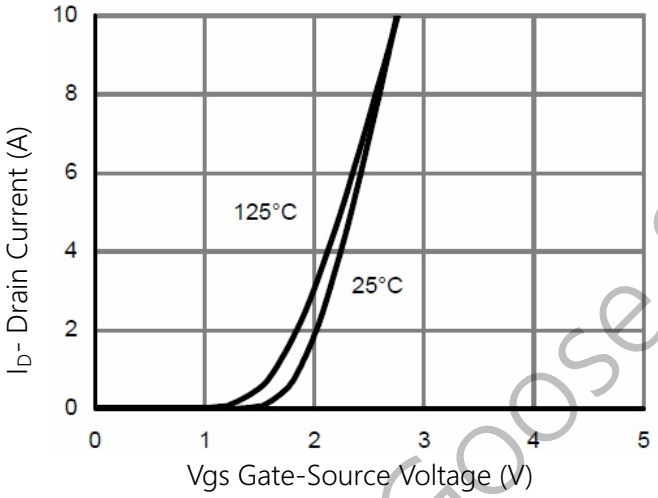

Figure 2 Transfer Characteristics

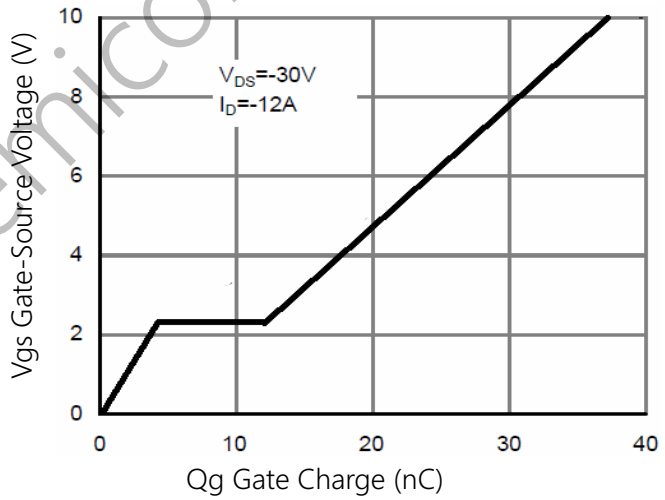

Figure 5 Gate Charge

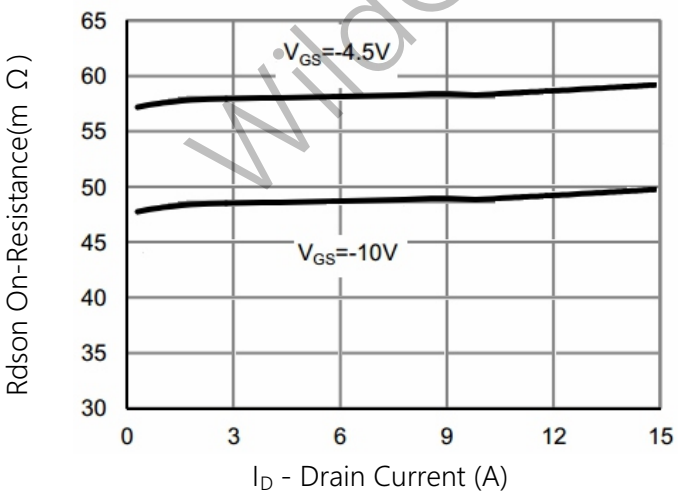

Figure 3 Rdson- Drain Current

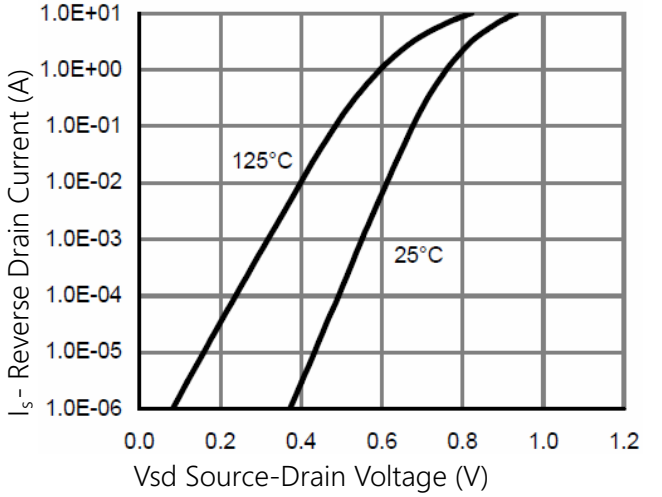

Figure 6 Source- Drain Diode Forward

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Typical Characteristics (Continued)

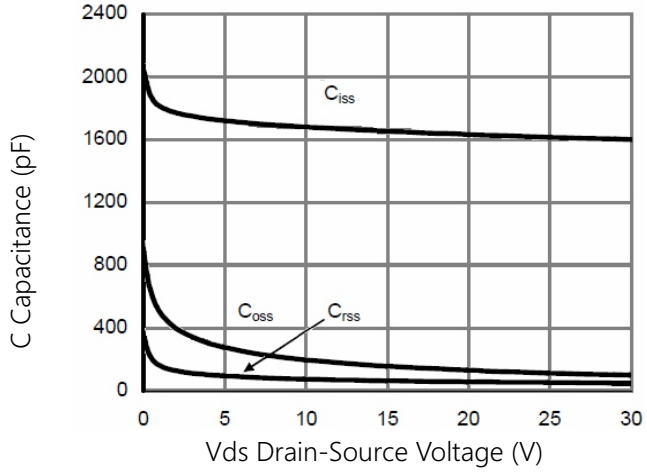

Figure 7 Capacitance vs Vds

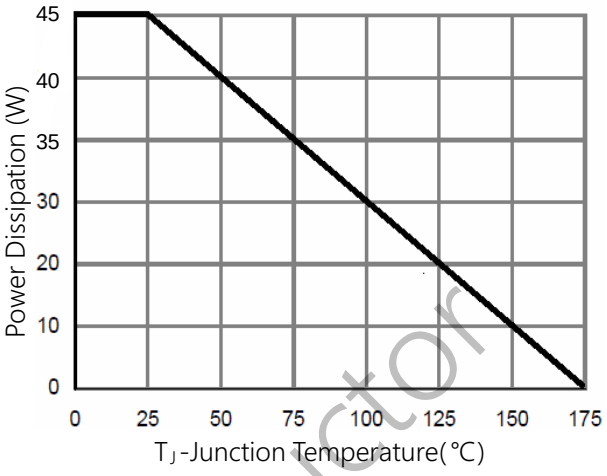

Figure 9 Power De-rating

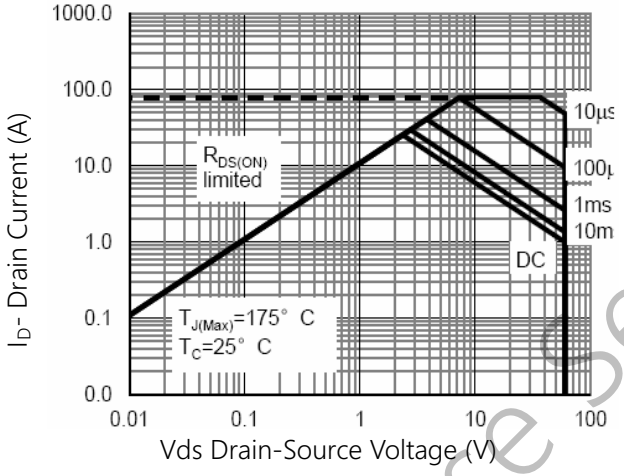

Figure 8 Safe Operation Area

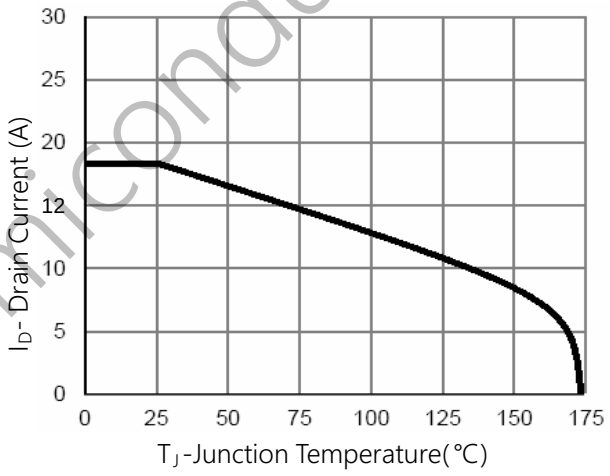

Figure 10 ID Current De-rating

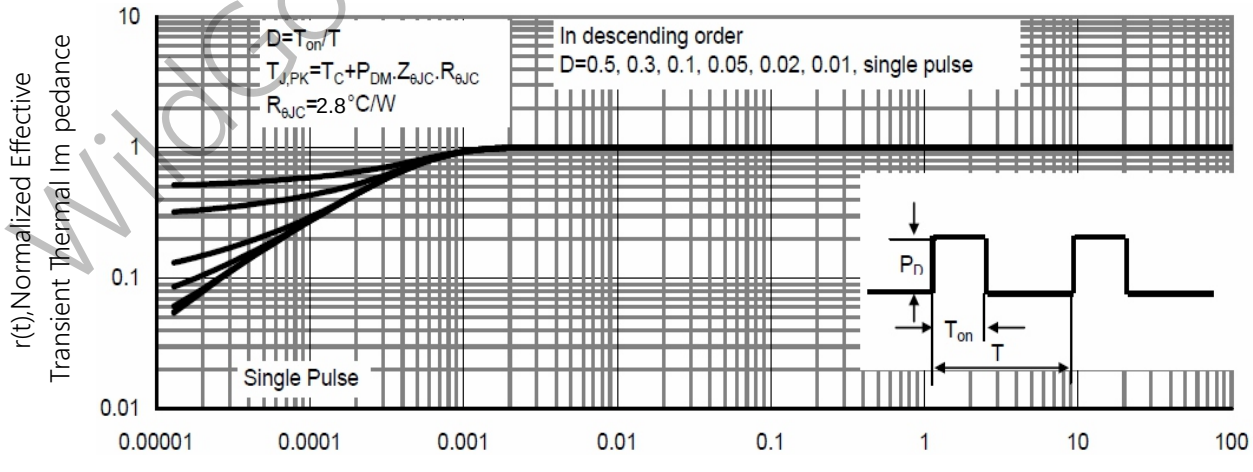

Figure 11 Normalized Maximum Transient Thermal Impedance

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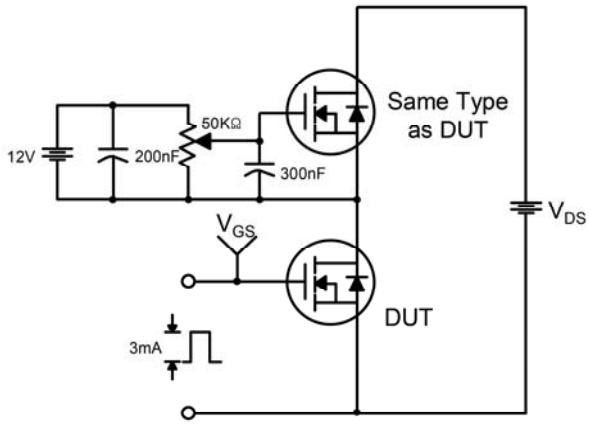
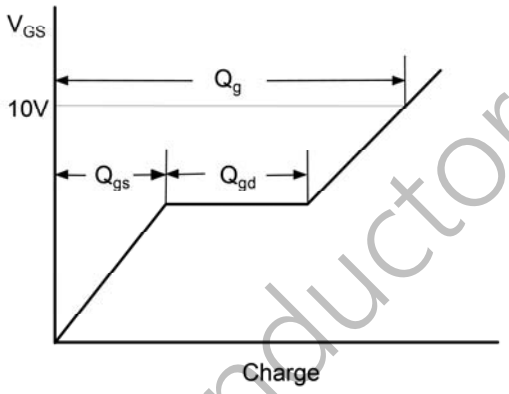
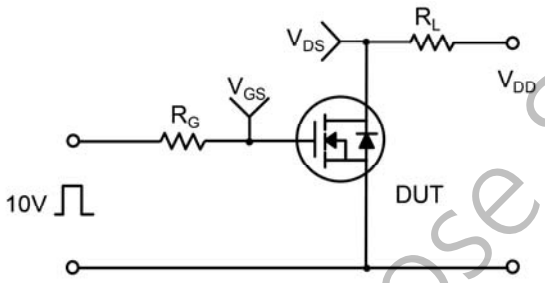
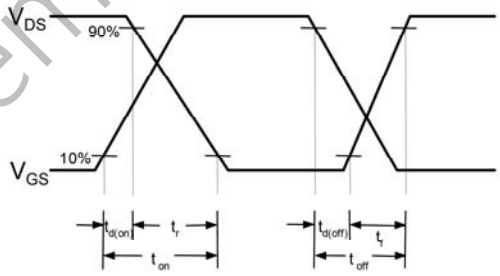
Gate Charge T est Circuit & Waveform



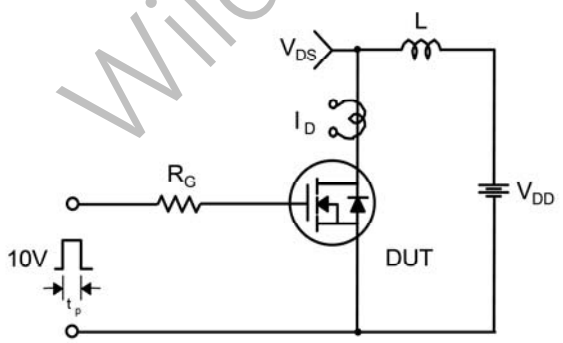


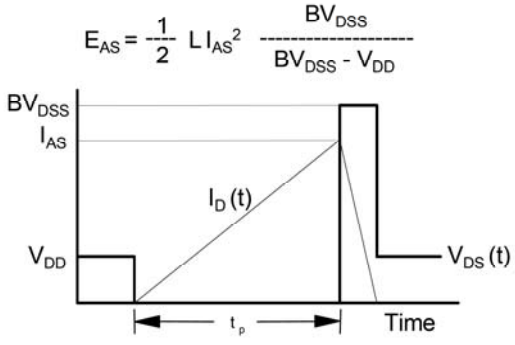
Resistive Switching Test Circuit & Waveforms





Unclamped Inductive Switching Test Circuit & Waveforms





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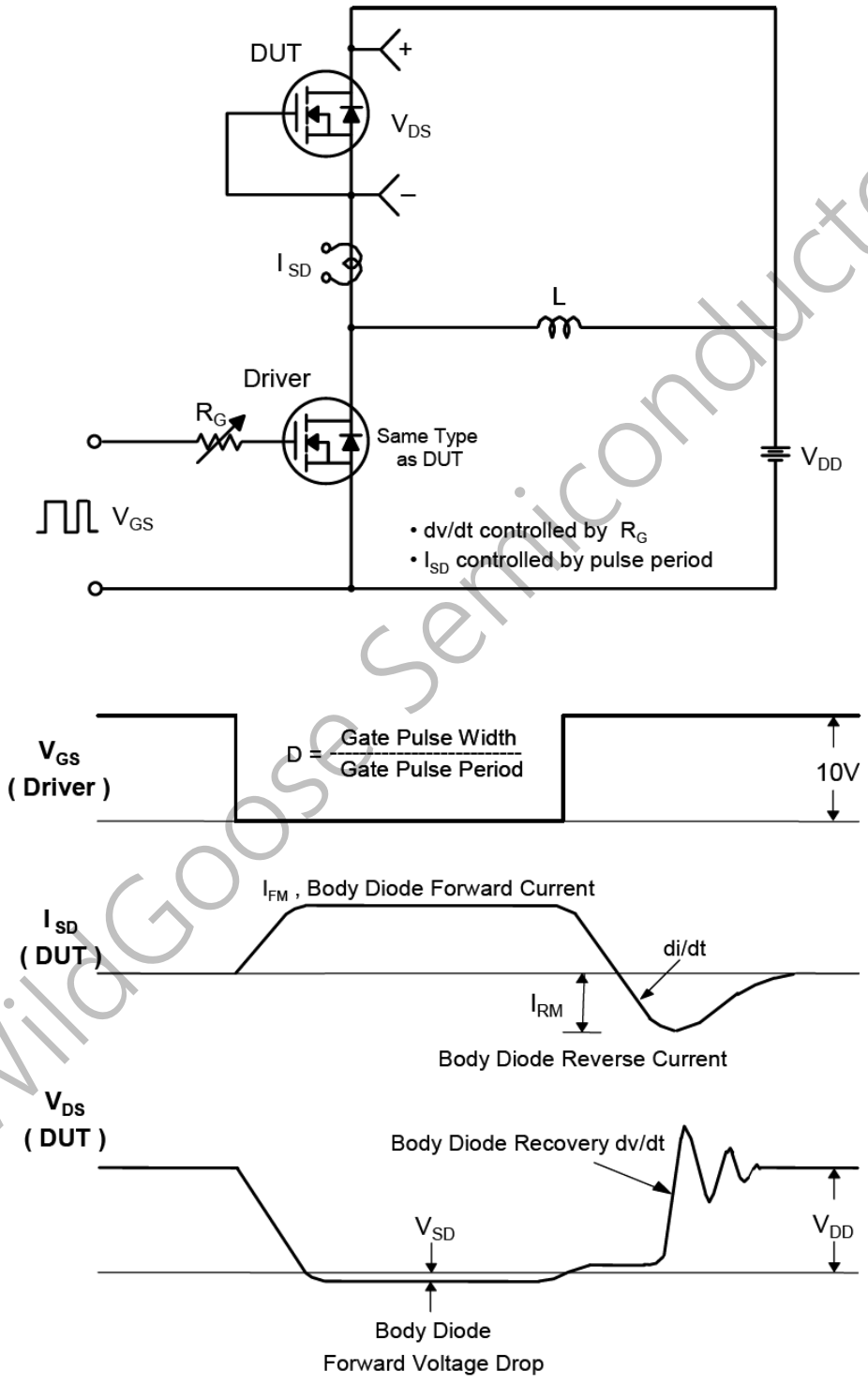
Peak Diode Recovery dv/d t Test Circuit & W**aveform**



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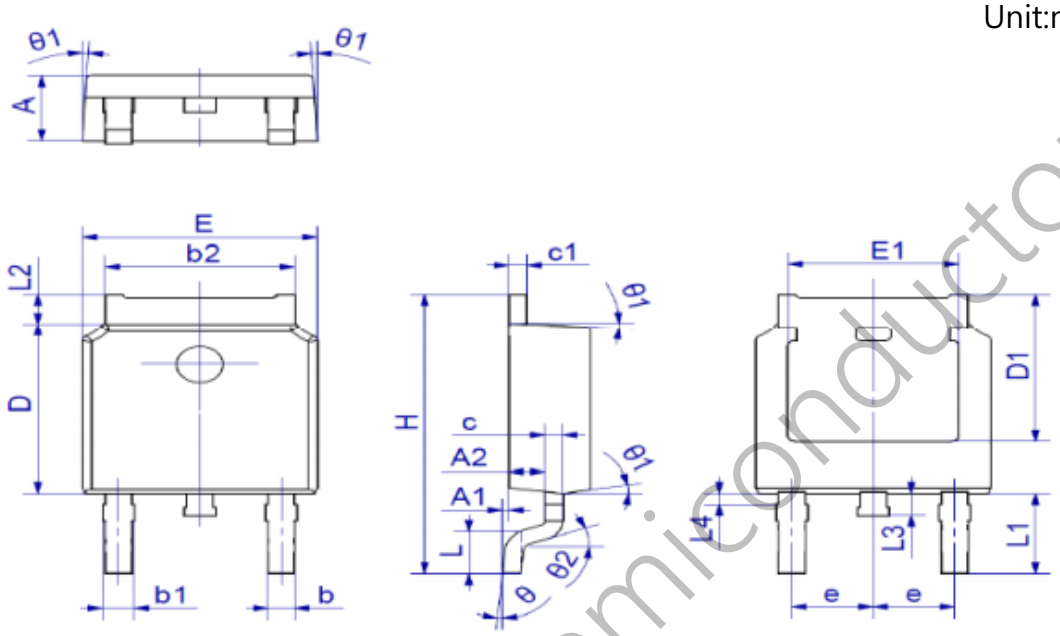
Package Dimension

TO-252

Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.10	2.50	0.083	0.098
A1	0	0.15	0.000	0.006
A2	0.76	1.36	0.030	0.054
b	0.61	0.85	0.024	0.033
b1	0.71	0.91	0.028	0.036
b2	5.04	5.64	0.198	0.222
c	0.508 TYP.		0.02 TYP.	
c1	0.508 TYP.		0.02 TYP.	
D	5.8	6.3	0.228	0.248
D1	5	5.6	0.197	0.220
E	6.3	6.9	0.248	0.272
E1	4.55	5.15	0.179	0.203
e	2.286 TYP.		0.09 TYP.	
H	9.65	10.4	0.380	0.409
L	1.4	1.7	0.055	0.067
L1	2.90 REF.		0.114 REF.	
L2	0.75	1.35	0.030	0.053
L3	0.6	1.2	0.024	0.047
θ	0°	10°	0°	10°
θ1	5°	9°	5°	9°
θ2	25° REF.		25° REF.	

关键尺寸									
A	A1	b	D	E	E1	e	H	D	L1

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