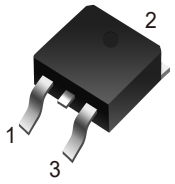
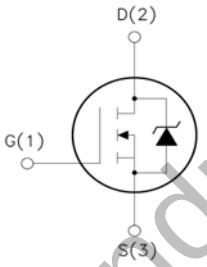
WGD160V10G

TO-252

RoHS COMPLIANT





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

Features:

- ☐ Advanced Trench Technology
- ☐ Excellent Switching Characteristics
- ☐ Extended Safe Operating Area
- ☐ Ultra Low Gate Charge:Qg=25.5nC (Typ.)
- ☐ VDSS=100V, ID=45A
- ☐ Rds(on):14mΩ(Typ.) @VG=10V
- ☐ 100% Avalanche Tested

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 25°C (Package limit) T_C = 100°C (Silicon limit)	I_D	 45 80 29	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	180	A
Avalanche energy, single pulse (I_D = 22A, Rg=25Ω)[1]	E_{AS}	125	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	68	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

※. Notes:

1.EAS is tested at starting Tj = 25℃, L = 0.5mH, IAS =22A, VGS = 10V.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	1.85	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	45	

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Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	100	-	-	V	V_{GS}=0V, I_D=250uA
		100	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	1.2	1.8	2.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=100V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	0	-	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	- -	14.0	16.0	mΩ	VGS=10V, ID=25A TO-252
Transconductance	g_{fs}	-	30.6	-	S	V_{DS}=5V, I_D=25A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	1316	-	pF	V_{GS}=0V, V_{DS}=50V, f=1MHz
Output Capacitance	C_{oss}	-	178	-		
Reverse Transfer Capacitance	C_{rss}	-	7.8	-		
Gate Total Charge	Q_G	-	25.2	-	nC	V_{GS}=10V, V_{DS}=50V, I_D=25A
Gate-Source charge	Q_{gs}	-	9.3	-		
Gate-Drain charge	Q_{gd}	-	6.8	-		
Turn-on delay time	$t_{d(on)}$	-	8.7	-	ns	V_{GS}=10V, V_{DD}=50V, R_{G_ext}=2.7Ω
Rise time	t_r	-	30.0	-		
Turn-off delay time	$t_{d(off)}$	-	15.7	-		
Fall time	t_f	-	10.3	-		
Gate resistance	R_G	-	1.5	-	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

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Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.93	1.4	V	V_{GS}=0V,I_{SD}=25A
Body Diode Reverse Recovery Time	t_{rr}	-	40.2	-	ns	I_F=25A,dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	43.6	-	nC	

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Typical Performance Characteristics

Fig 1: Output Characteristics

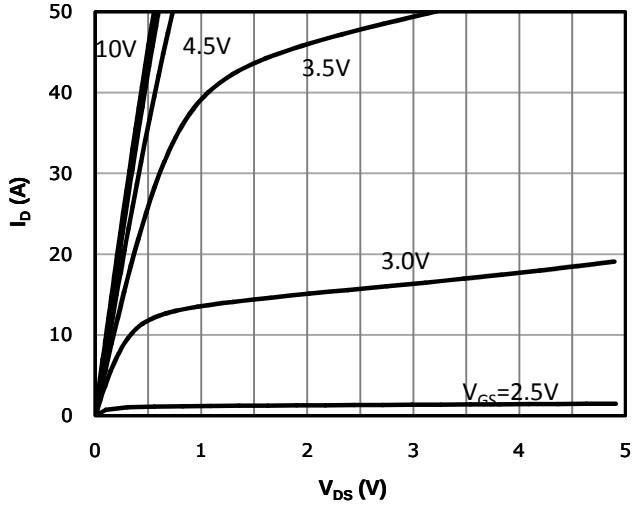


Fig 2: Transfer Characteristics

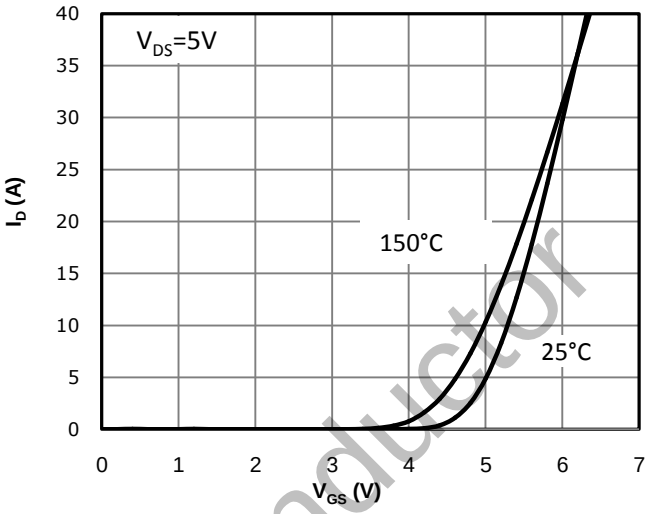


Fig 3: Rds(on) vs Drain Current and Gate Voltage

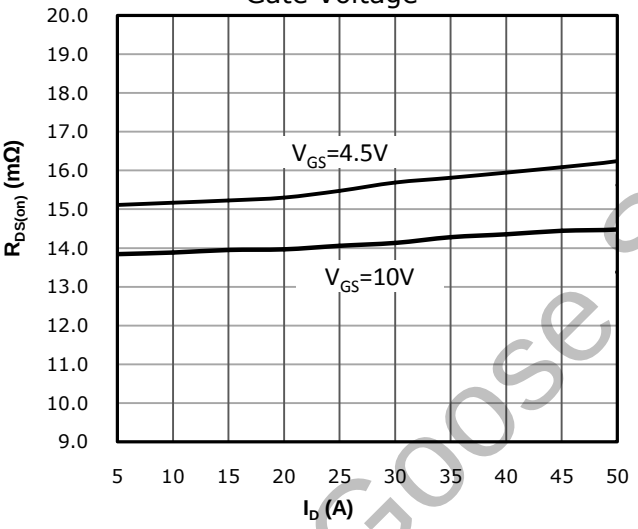


Fig 4: Rds(on) vs Gate Voltage

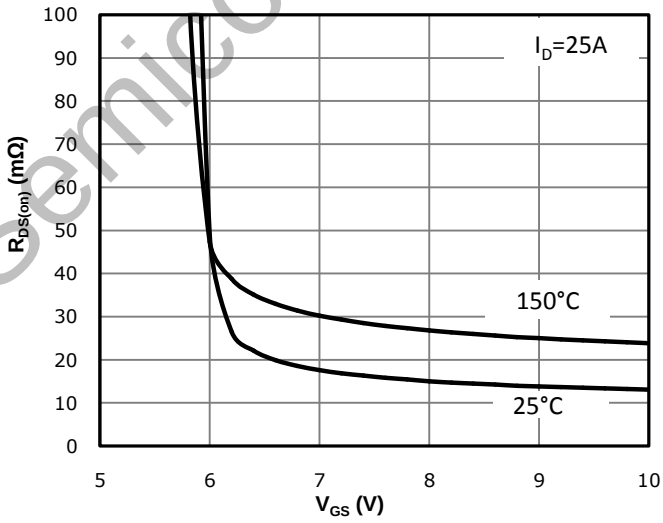


Fig 5: Rds(on) vs. Temperature

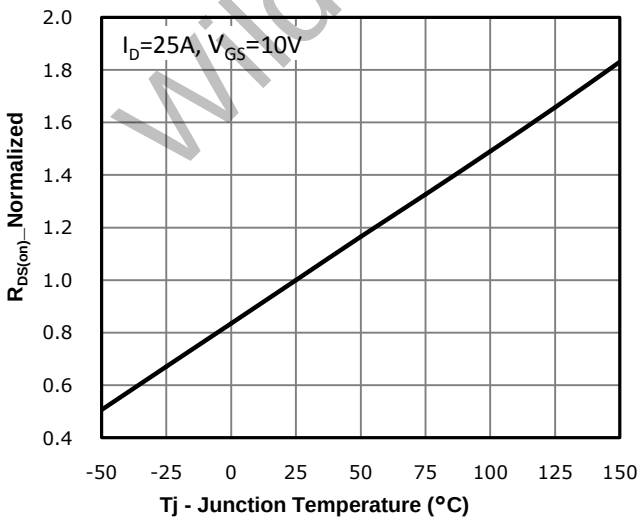
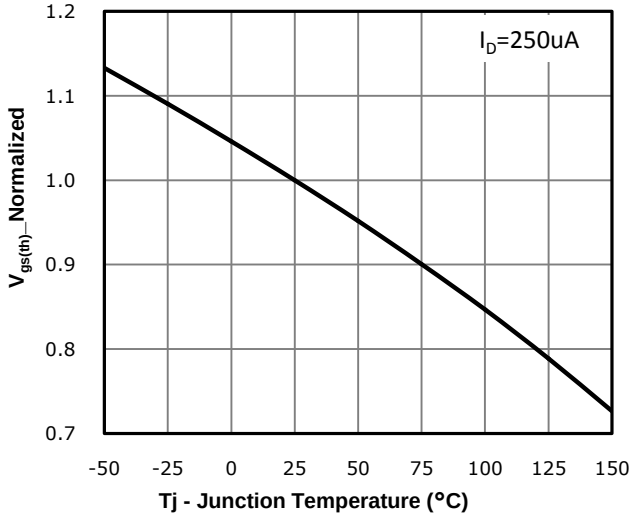


Fig 6: Vgs(th) vs. Temperature



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Typical Performance Characteristics

Fig 7: BVdss vs. Temperature

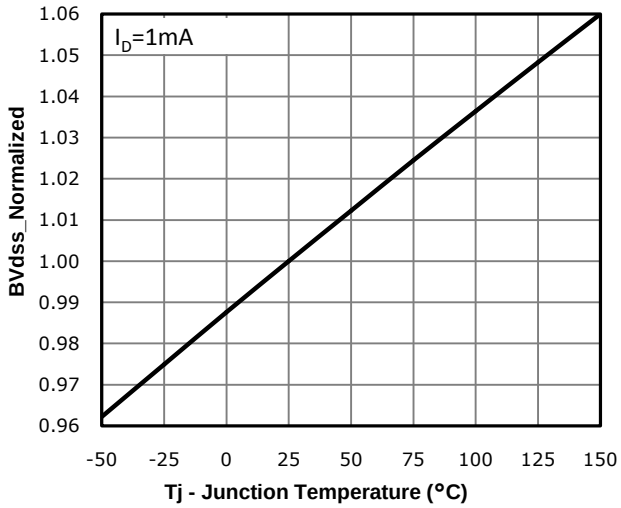


Fig 8: Capacitance Characteristics

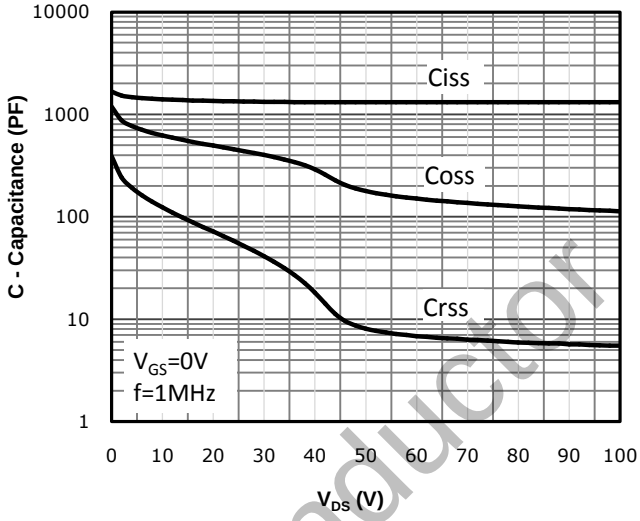


Fig 9: Gate Charge Characteristics

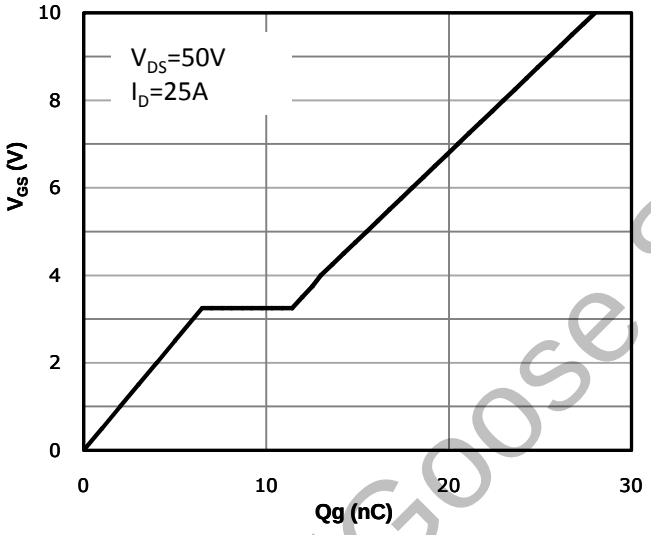


Fig 10: Body-diode Forward Characteristics

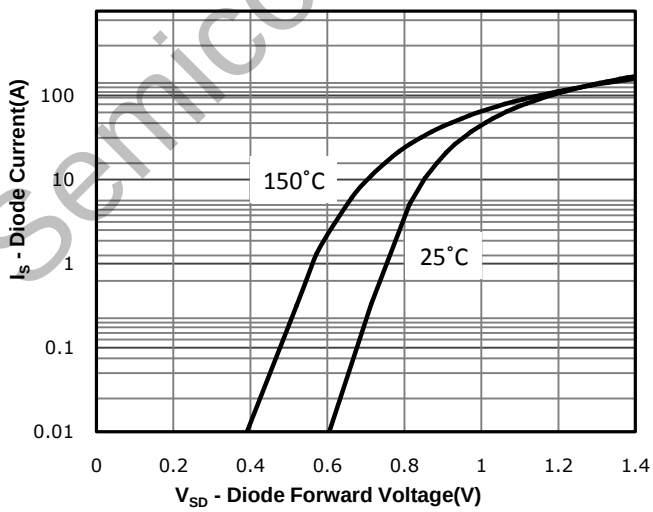


Fig 11: Power Dissipation

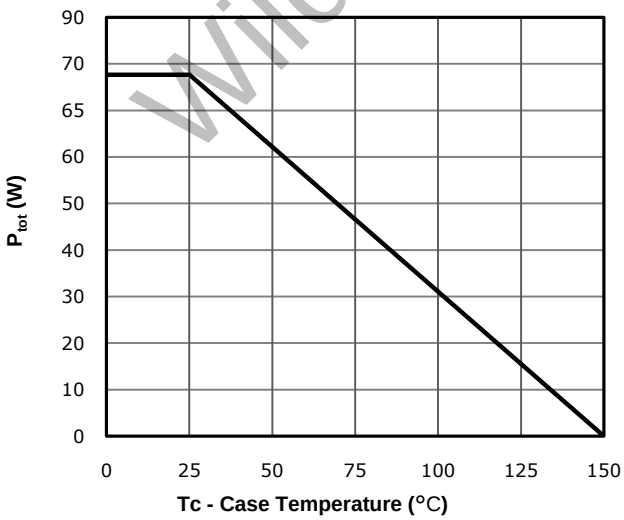
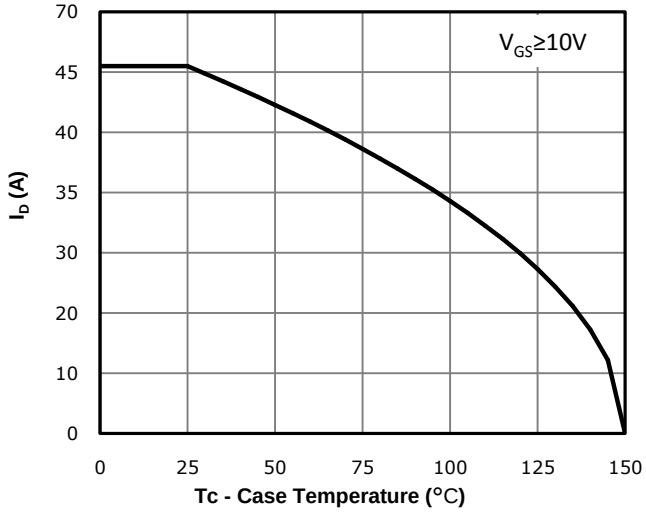


Fig 12: Drain Current Derating



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Typical Performance Characteristics

Fig 13: Safe Operating Area

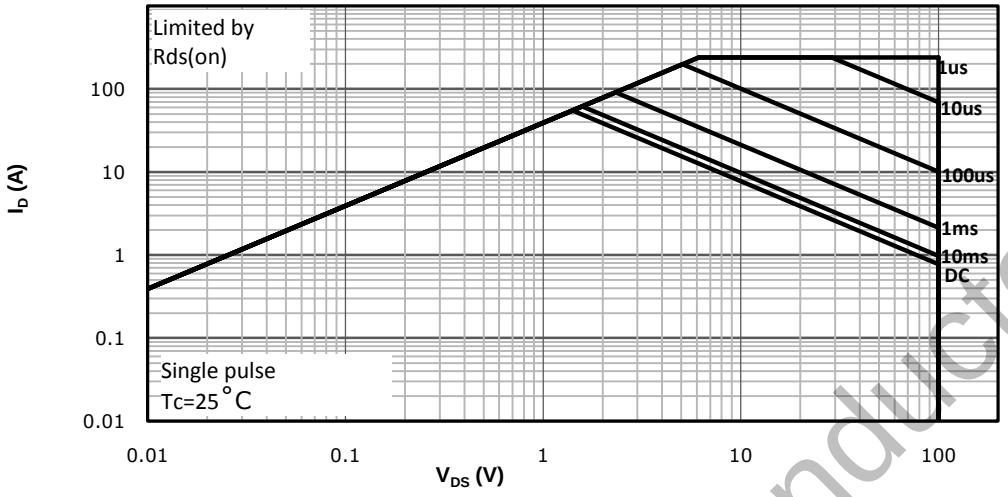
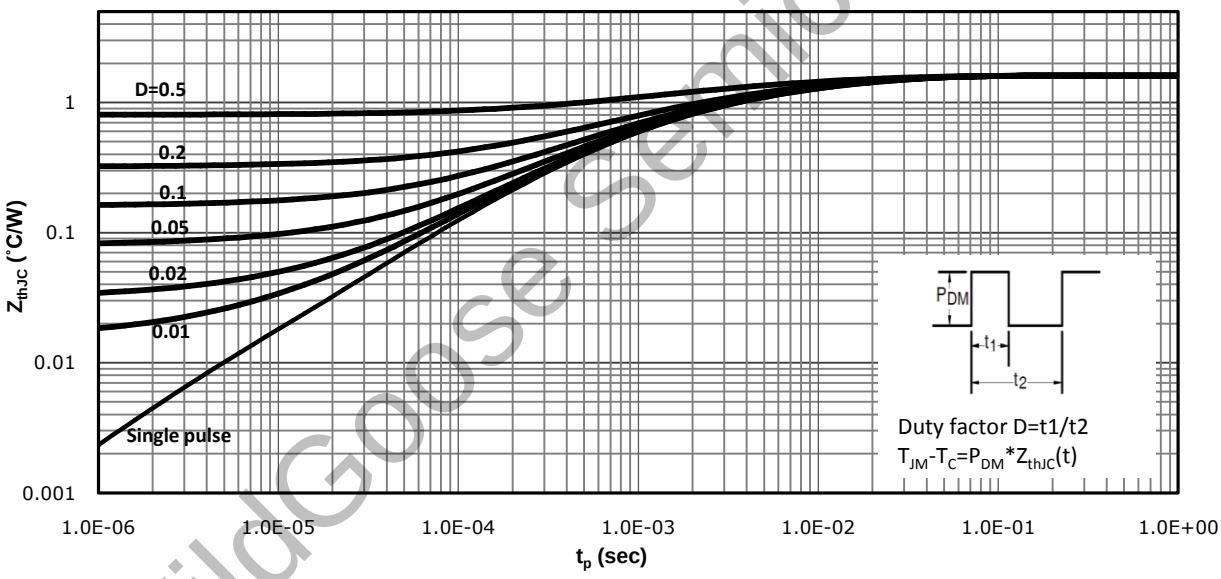


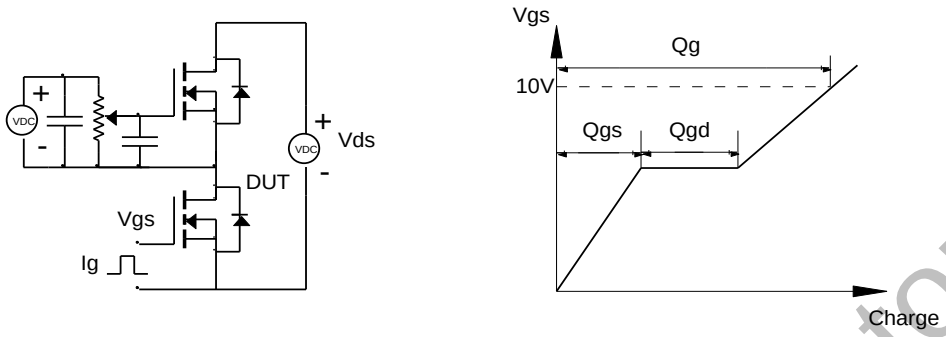
Fig 14: Max. Transient Thermal Impedance



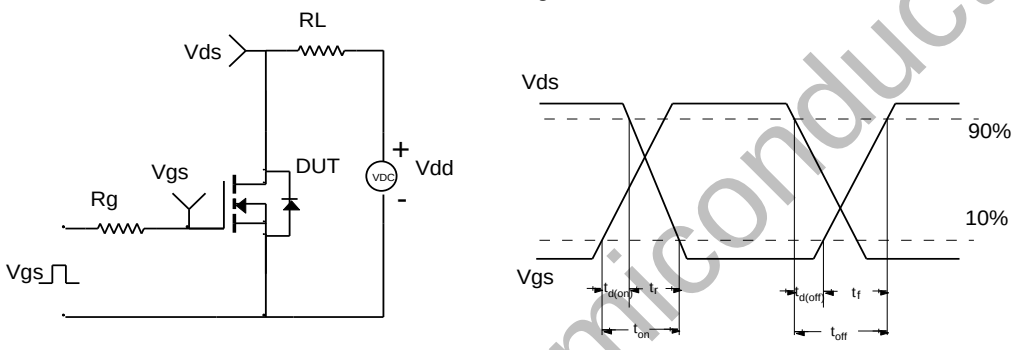
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Test Circuit

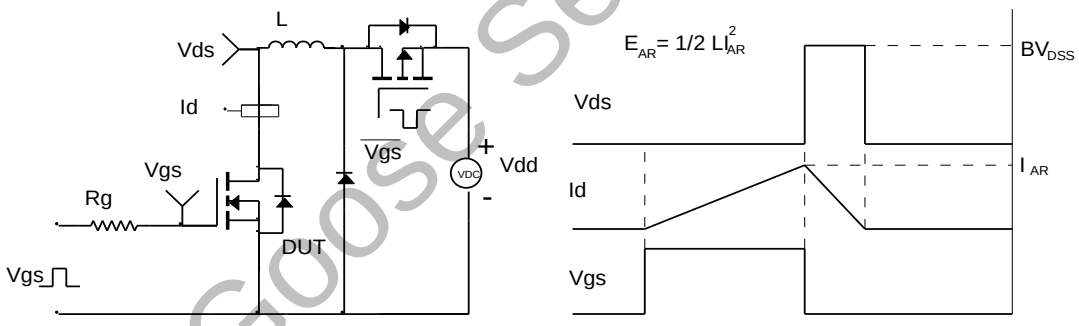
Gate Charge Test Circuit & Waveform



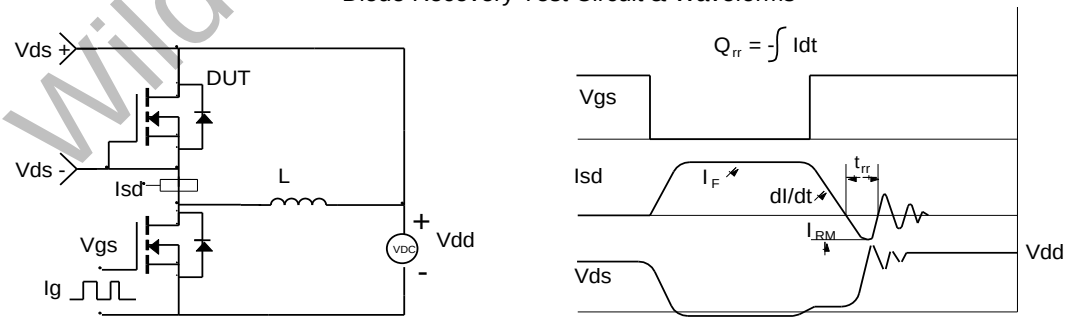
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

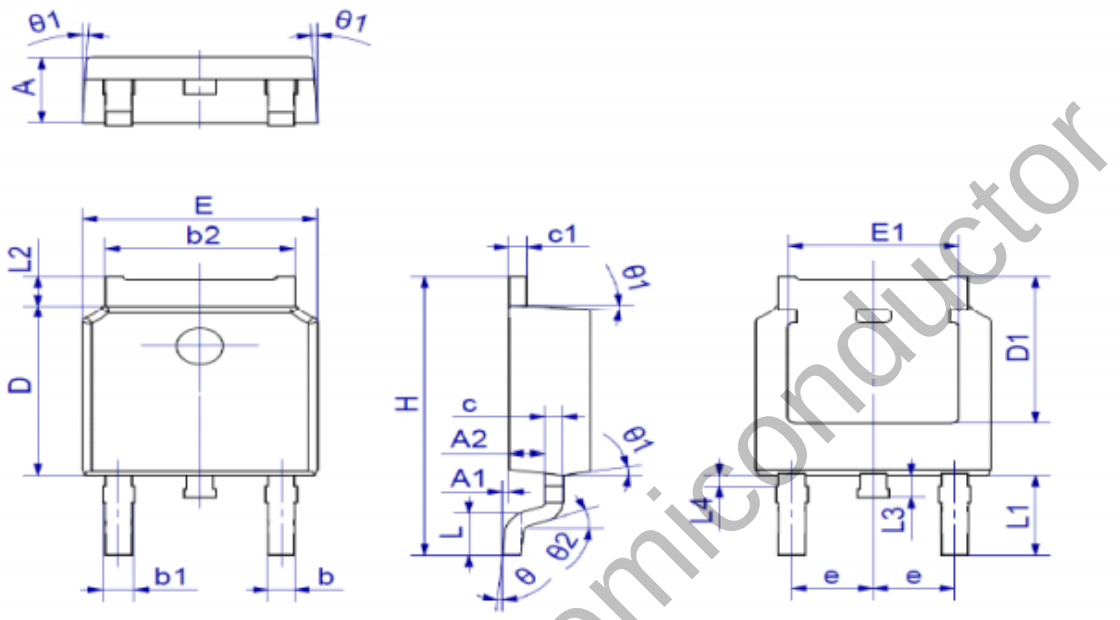


WildGoose Semiconductor

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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