



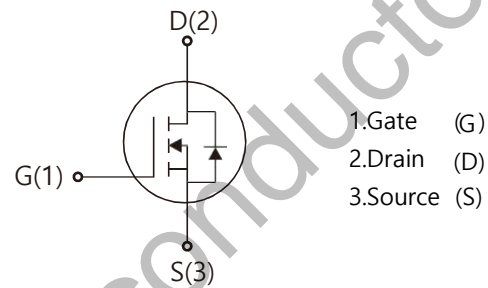
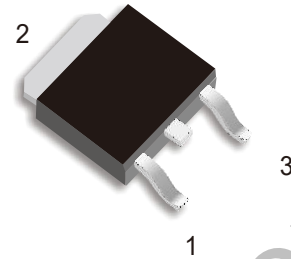
WGD65R550G

Features

- Super Junction technology
- Much lower Ron*A Performance for On-state efficiency
- Better efficiency due to very low FOM
- Ultra-fast body diode
- VDSS=650V, ID=8A
- $R_{DS(on)} : 0.42\text{ m}\Omega$ (Typ) @VG=10V



TO-252



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	650	V
Continuous drain current $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_D	8 5	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D\ pulse}$	32	A
Avalanche energy, single pulse ($L=30\text{mH}$, $R_g=30\Omega$)	E_{AS}	65	mJ
Gate-Source voltage	V_{GS}	± 30	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	73	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case. Max	R_{thJC}	1.70	°C/W
Thermal resistance, junction – ambient. Max	R_{thJA}	143	

Electrical Characteristic (at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	650	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Gate threshold voltage	$V_{GS(th)}$	3	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS}=650V, V_{GS}=0V$ $T_C=25^\circ C$
		-	1	-		$T_C=150^\circ C$
Gate-source leakage current	I_{GSS}	-	0.5	100	nA	$V_{GS}=\pm 30V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	0.42	0.55	Ω	$V_{GS}=10V, I_D=4A,$ $T_C=25^\circ C$
		-	0.75	-		$T_C=150^\circ C$
Transconductance	g_{fs}	-	6.6	-	S	$V_{DS}=20V, I_D=4A$
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	470	-	pF	$V_{GS}=0V, V_{DS}=100V,$ $f=1MHz$
Output Capacitance	C_{oss}	-	25	-		
Reverse Transfer Capacitance	C_{rss}	-	0.47	-		
Gate Total Charge	Q_G	-	15.6	-	nC	$V_{GS}=10V, V_{DS}=480V,$ $I_D=4A$
Gate-Source charge	Q_{gs}	-	3.1	-		
Gate-Drain charge	Q_{gd}	-	6.5	-		
Turn-on delay time	$t_{d(on)}$	-	15	-	ns	$T_j=25^\circ C, V_{GS}=10V,$ $I_D=4A, V_{DS}=400V,$ $R_g=27\Omega$
Rise time	t_r	-	17	-		
Turn-off delay time	$t_{d(off)}$	-	78	-		
Fall time	t_f	-	16	-		
Gate resistance	R_{gint}	-	14	-	Ω	$f=1MHz$

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	0.6	0.85	1.1	V	$V_{GS}=0V, I_{SD}=4A$
Body Diode Reverse Recovery Time	t_{rr}	-	210	-	ns	$I_{sd}=4A$ $dI/dt=100A/us$
Body Diode Reverse Recovery Charge	Q_{rr}	-	1.76	-	μC	$V_{ds}=400V$

Typical Performance Characteristics

Fig 1. Output Characteristics (Tj=25°C)

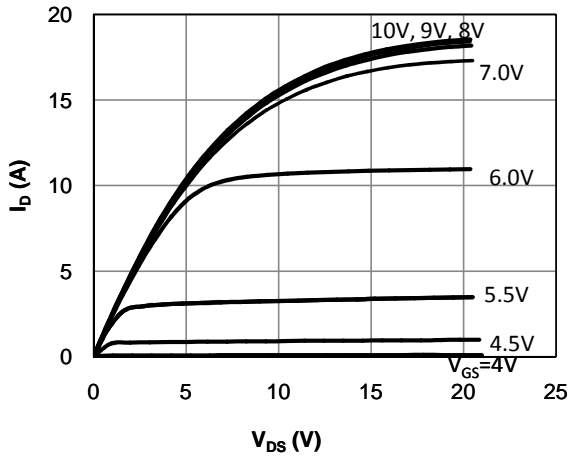


Fig 2. Output Characteristics (Tj=150°C)

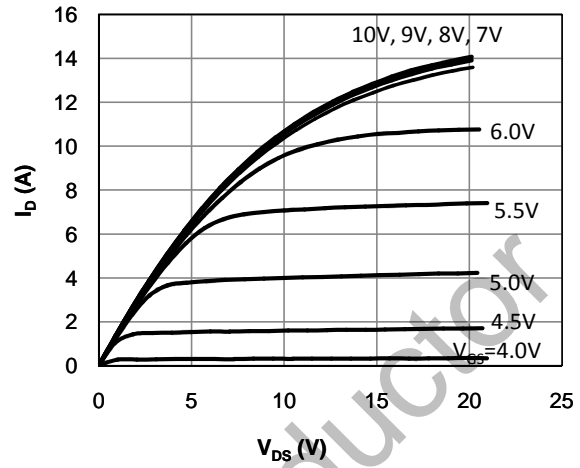


Fig 3: Transfer Characteristics

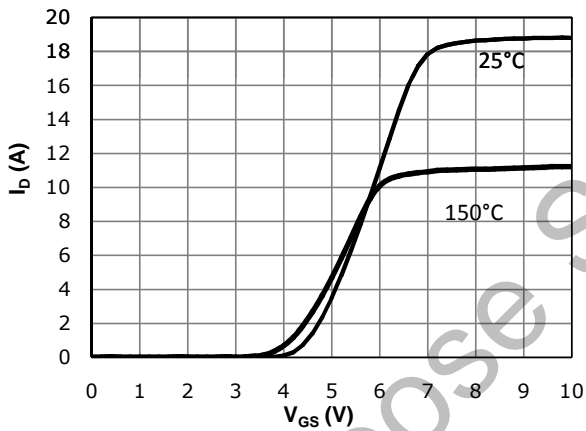


Fig 4: V_{TH} Vs T_j Temperature Characteristics

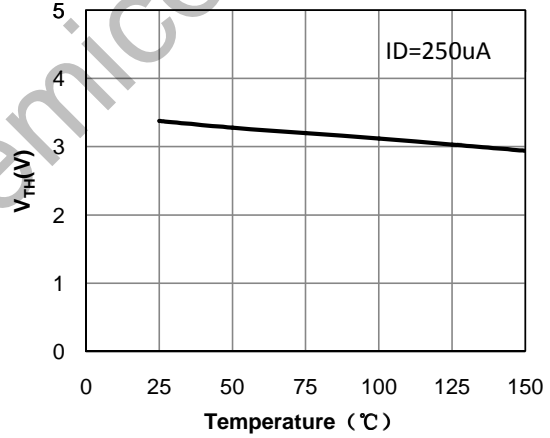


Fig 5: $R_{DS(on)}$ Vs I_{DS} Characteristics (Tc=25°C)

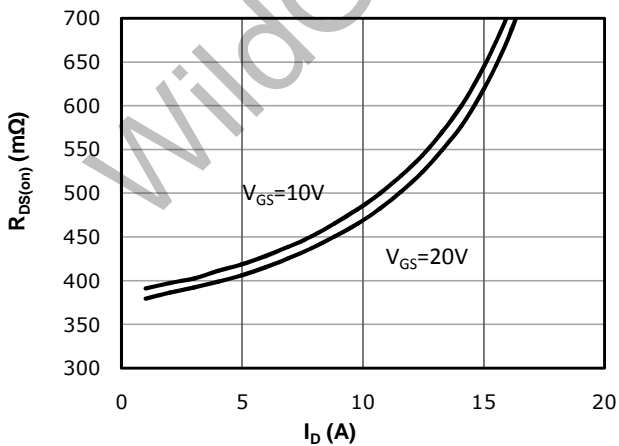


Fig 6: $R_{DS(on)}$ vs. Temperature

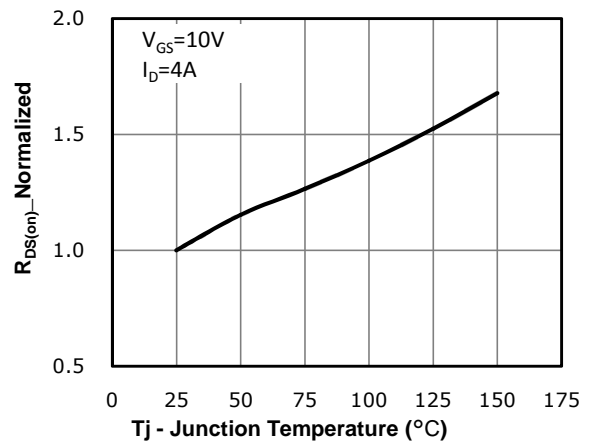


Fig 7: BVDSS vs. Temperature

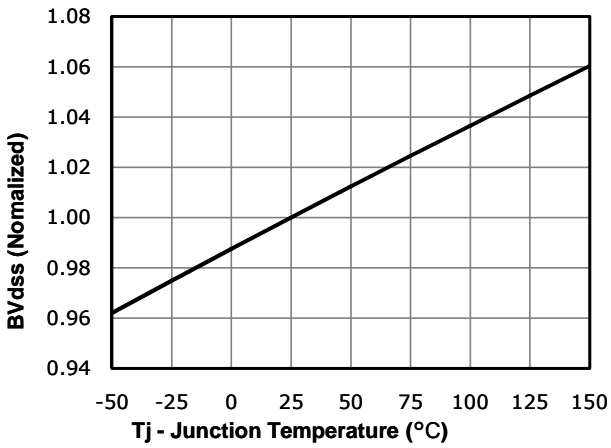


Fig 8: Rds(on) vs Gate Voltage

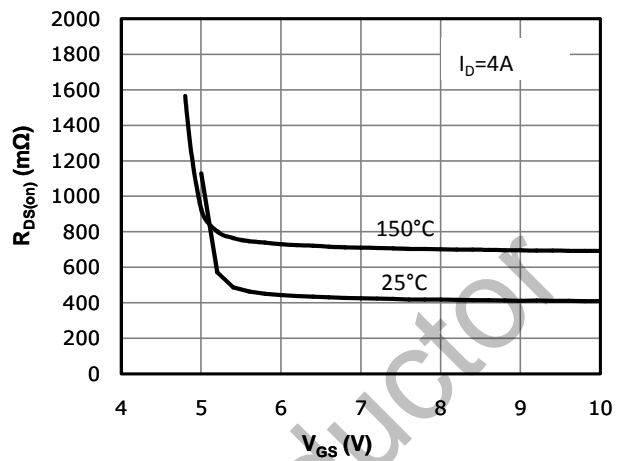


Fig 9: Body-diode Forward Characteristics

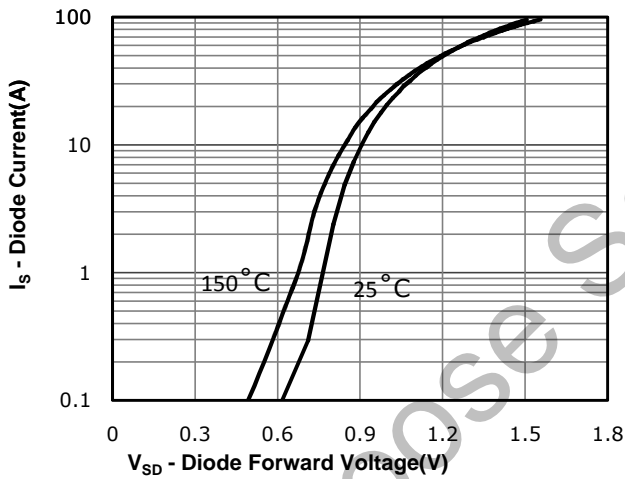


Fig 10: Gate Charge Characteristics

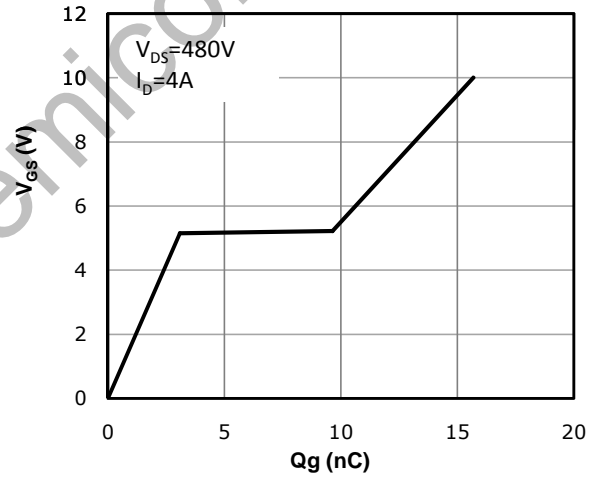


Fig 11: Capacitance Characteristics

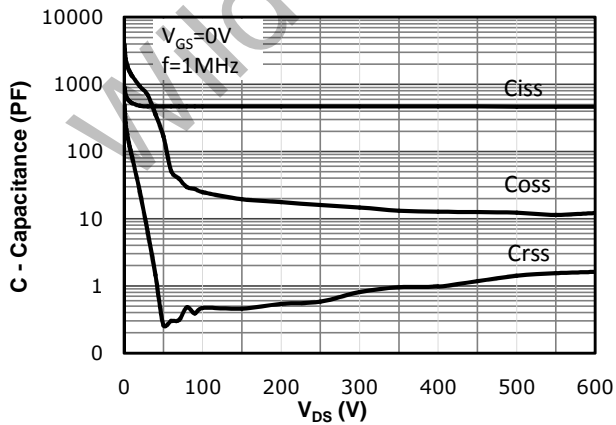


Fig 12: Safe Operating Area

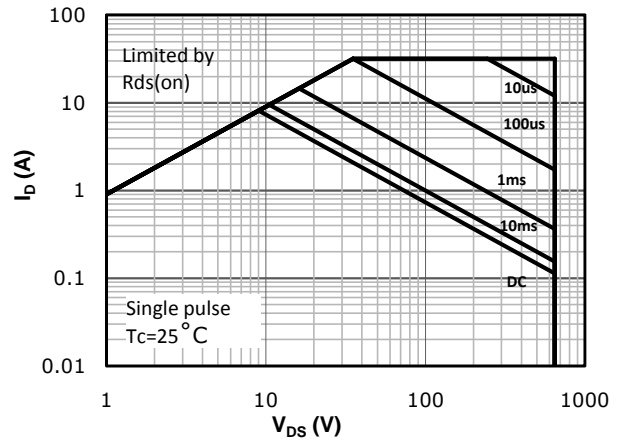
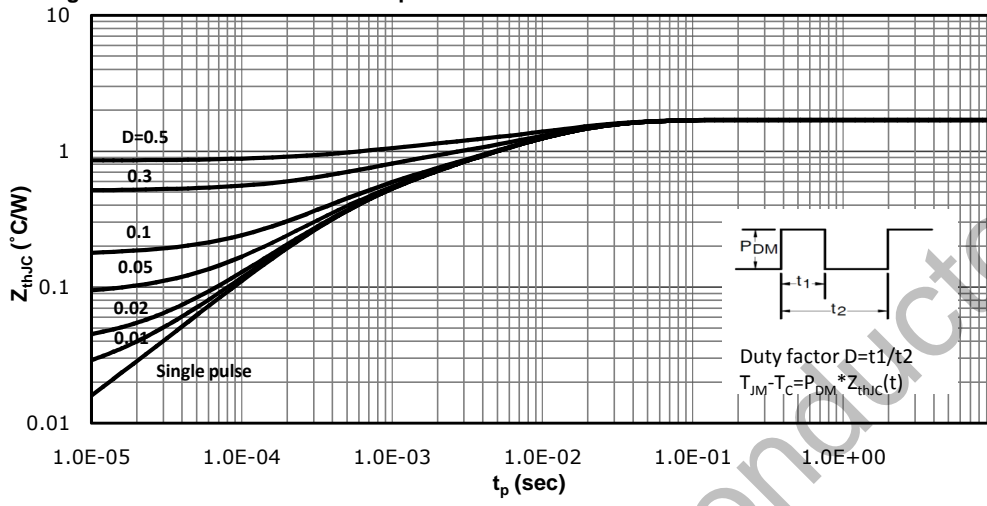


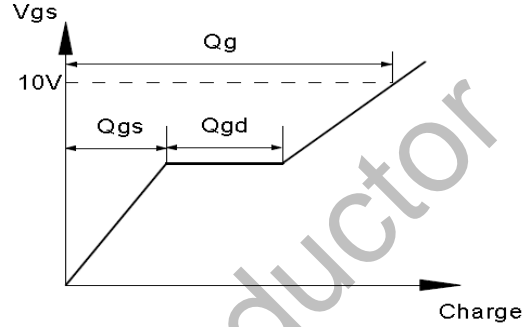
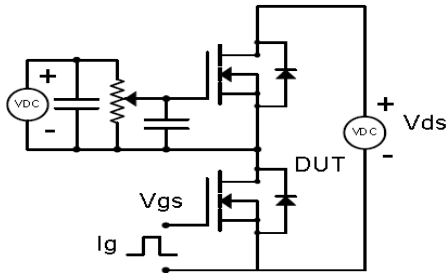
Fig 13: Max. Transient Thermal Impedance



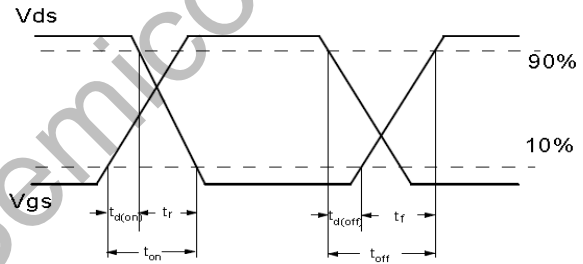
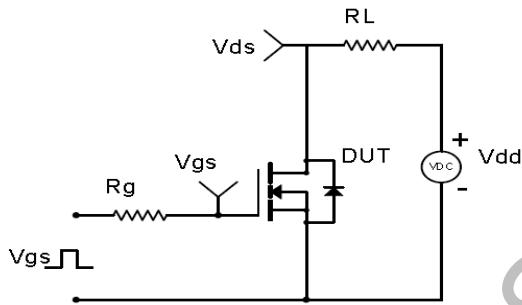
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Test Circuit & Waveform

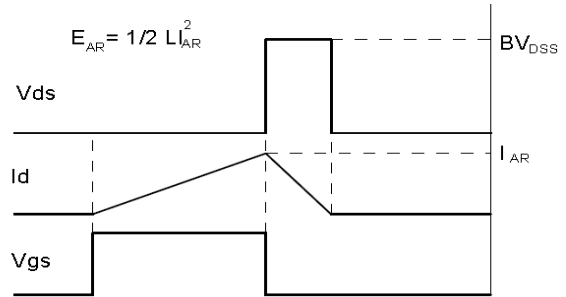
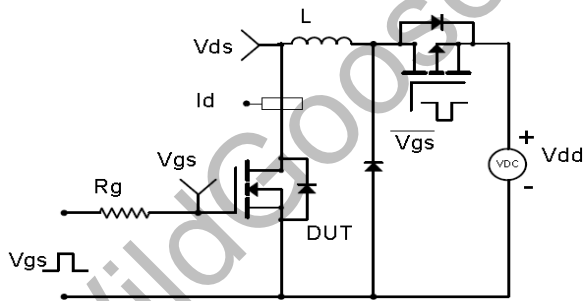
Gate Charge Test Circuit & Waveform



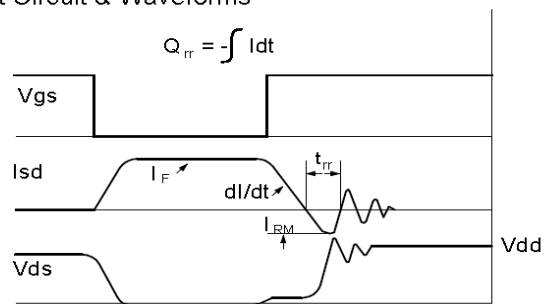
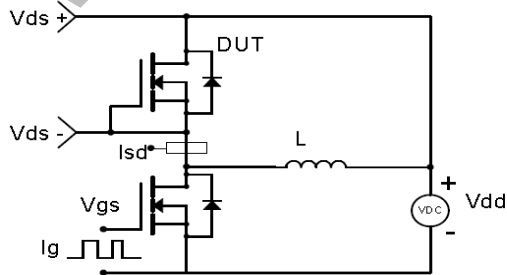
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



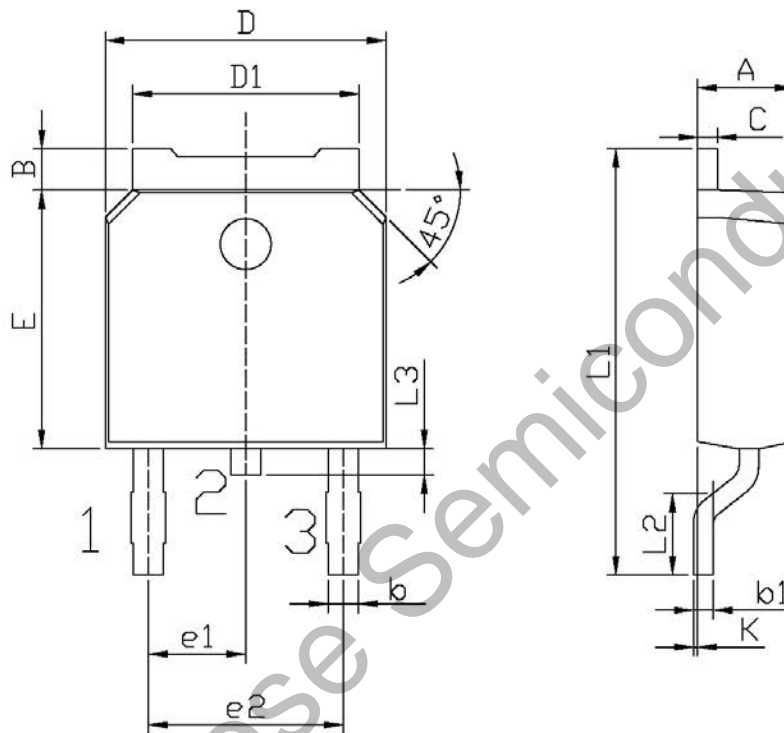
Diode Recovery Test Circuit & Waveforms



Package Dimension

TO-252

Unit: mm



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10

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