
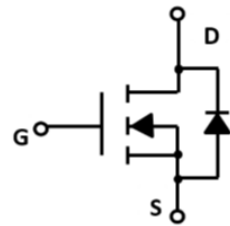


<p>Features</p> <ul style="list-style-type: none"> • 100V, 33A • $R_{DS(ON)} = 38m\Omega$ (Max.) @ $V_{GS} = 10V, I_D = 15A$ • Advanced Process Technology • Ultra Low On-Resistance • Dynamic dv/dt Rating • Fast Switching • Fully Avalanche Rated 	<p>Application</p> <ul style="list-style-type: none"> • Power switching application • Hard switched and high frequency circuits • Uninterruptible Power Supply
<p>Package</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;">WFP540WP</p>	

Absolute Maximum Ratings $T_C = 25^\circ C$ unless otherwise specified

Symbol	Parameter	Max.	Units
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current $T_C = 25^\circ C$	33	A
I_{DM}	Pulsed Drain Current ^{note1}	132	A
E_{AS}	Single Pulse Avalanche Energy ^{note2}	335	mJ
I_{AS}	Single Pulse Avalanche Current ^{note1}	22	A
E_{AR}	Repetitive Avalanche Energy ^{note1}	201	mJ
P_D	Power Dissipation $T_C = 25^\circ C$	110	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.14	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^\circ C$

*Drain current limited by maximum junction temperature

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^{note2}	$V_{GS} = 10V, I_D = 15A$	-	30	38	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$	-	1331	-	pF
C_{oss}	Output Capacitance		-	276	-	pF
C_{rss}	Reverse Transfer Capacitance		-	88	-	pF
Q_g	Total Gate Charge(10V)	$V_{DD} = 80V, I_D = 33A,$ $V_{GS} = 10V$	-	53	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	29	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 50V, I_D = 10A$ $R_G = 25\Omega$	-	39	-	ns
t_r	Turn-On Rise Time		-	45	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	207	-	ns
t_f	Turn-Off Fall Time		-	64	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Continuous Body Diode Current	$T_C = 25^\circ\text{C}$	-	-	33	A
I_{SM}	Pulsed Diode Forward Current		-	-	120	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 15A$	-	-	1.5	V
t_{rr}	Body Diode Reverse Recovery Time	$V_{GS} = 0V, I_F = 10A,$	-	-	102	ns
Q_{rr}	Body Diode Reverse Recovery Time Charge	$di/dt = 100A/\mu s$	-	-	400	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L=1mH, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s, \text{Duty Cycle } \leq 1\%$

Typical Performance Characteristics

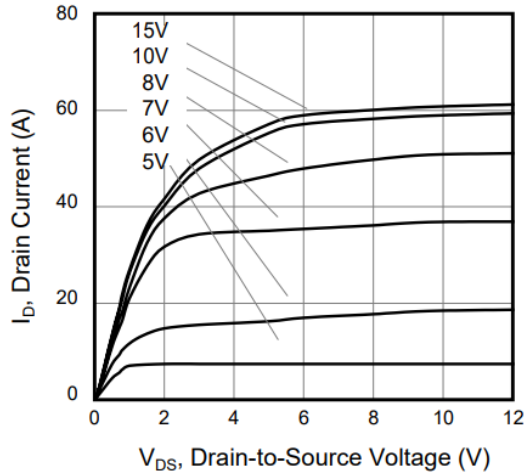


Figure 1. Output Characteristics

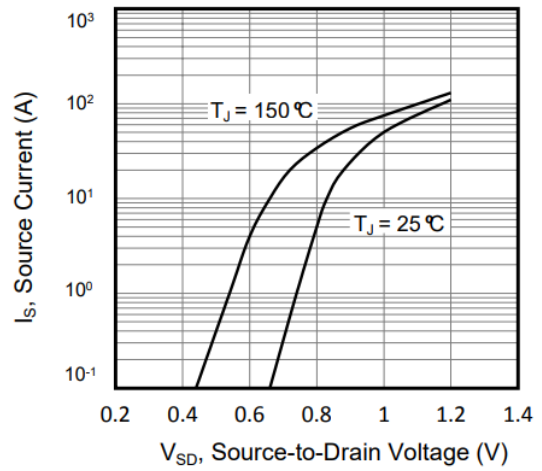


Figure 2. Body Diode Forward Voltage

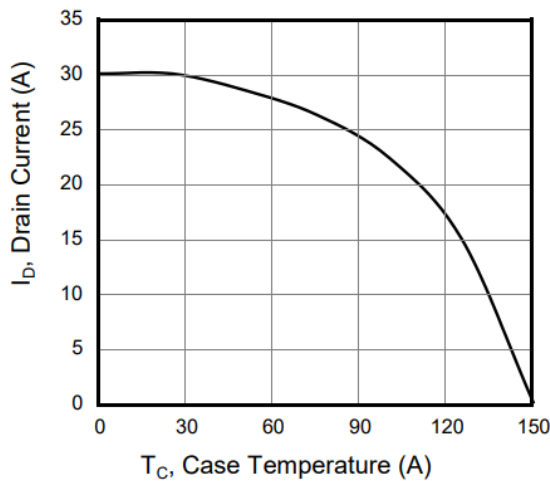


Figure 3. Drain Current vs. Temperature

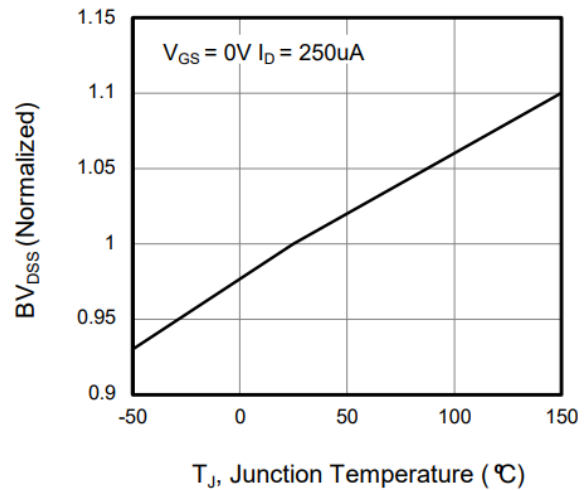


Figure 4. BV_{DSS} Variation vs. Temperature

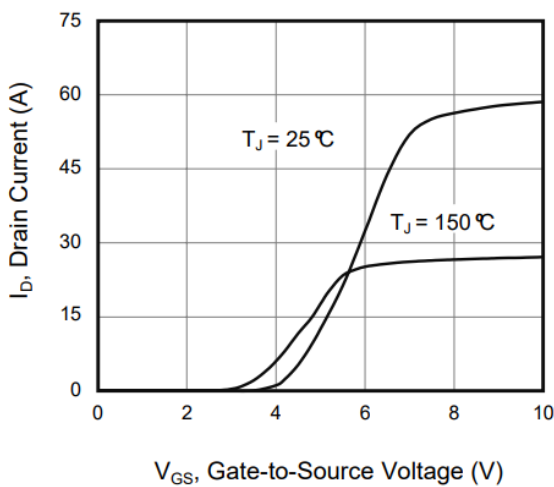


Figure 5. Transfer Characteristics

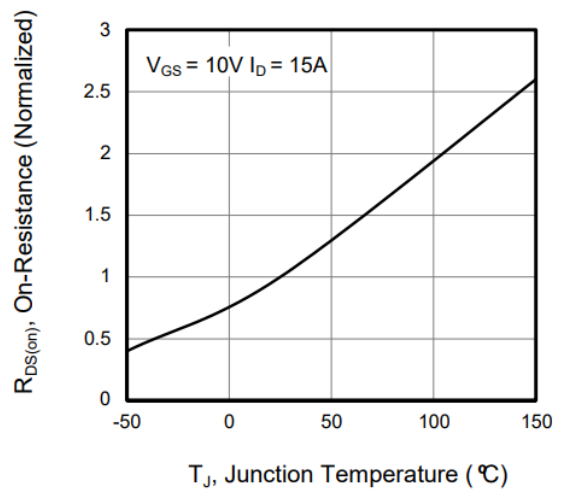


Figure 6. On-Resistance vs. Temperature

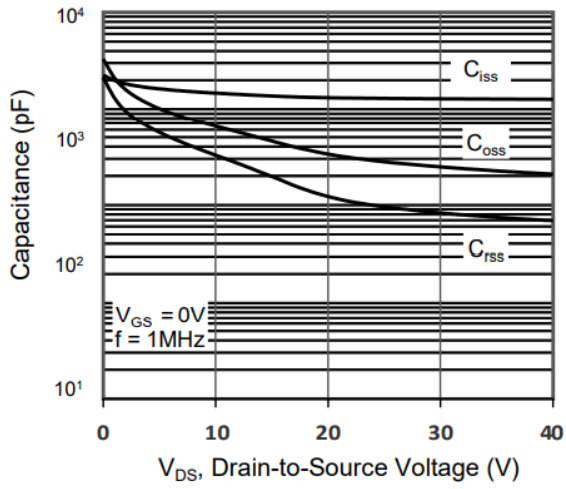


Figure 7. Capacitance

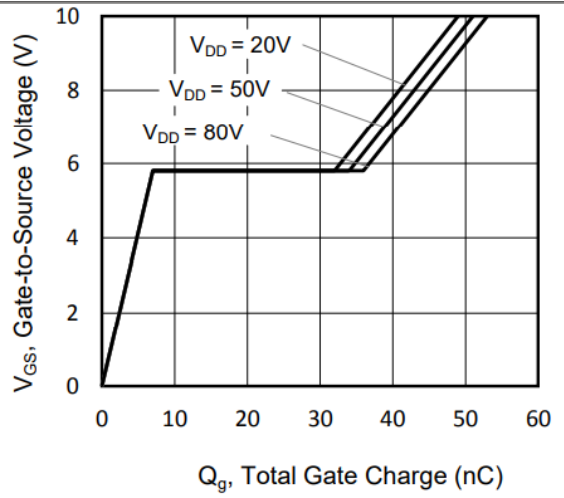


Figure 8. Gate Charge

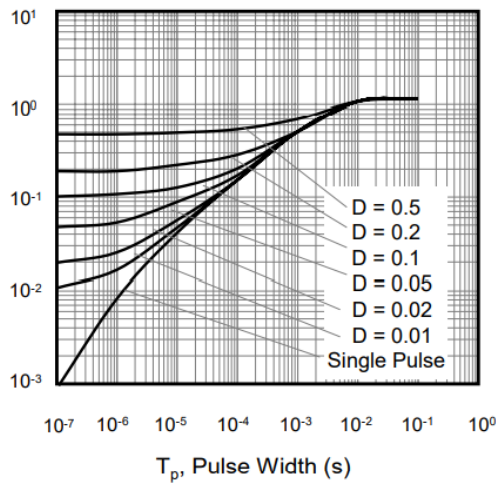


Figure 9 Effective Transient Thermal Impedance

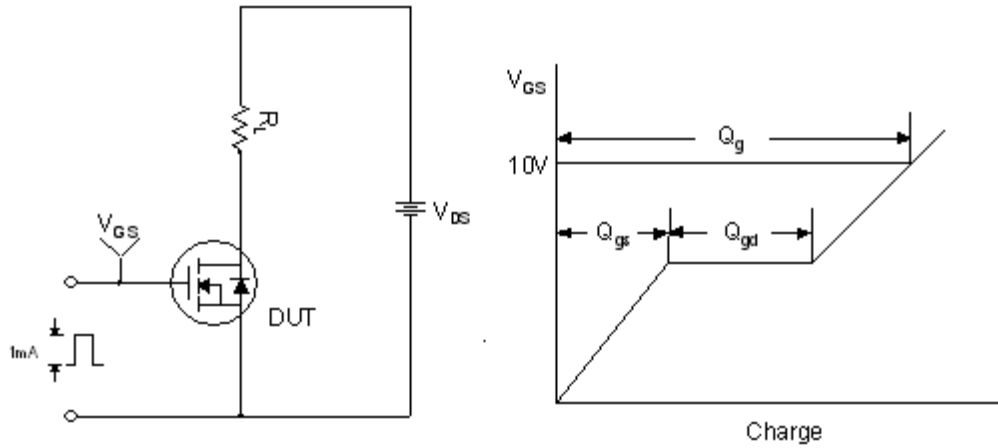


Figure 10. Gate Charge Test Circuit & Waveform

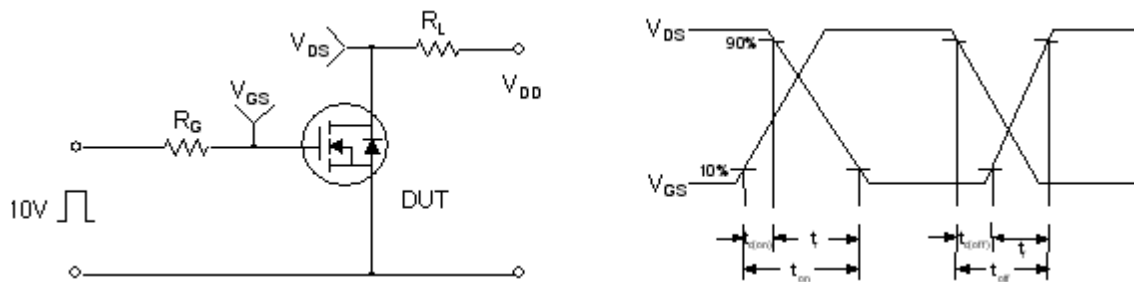


Figure 11. Resistive Switching Test Circuit & Waveforms

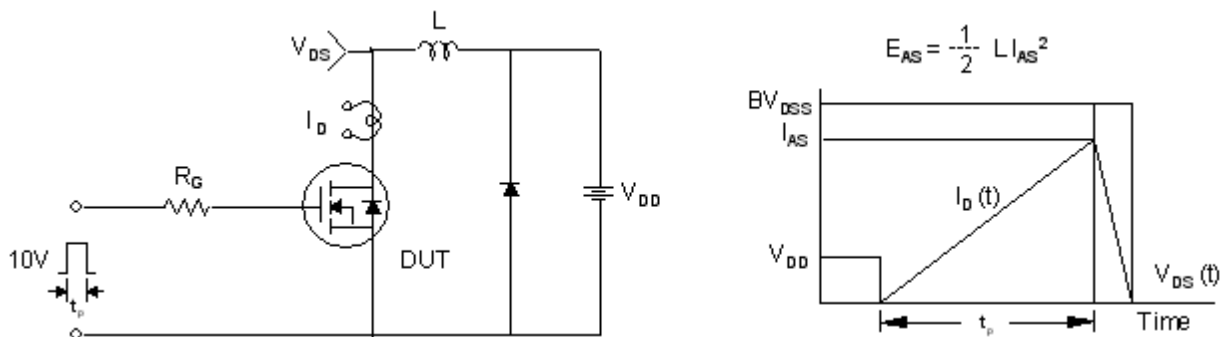


Figure 12. Unclamped Inductive Switching Test Circuit & Waveforms

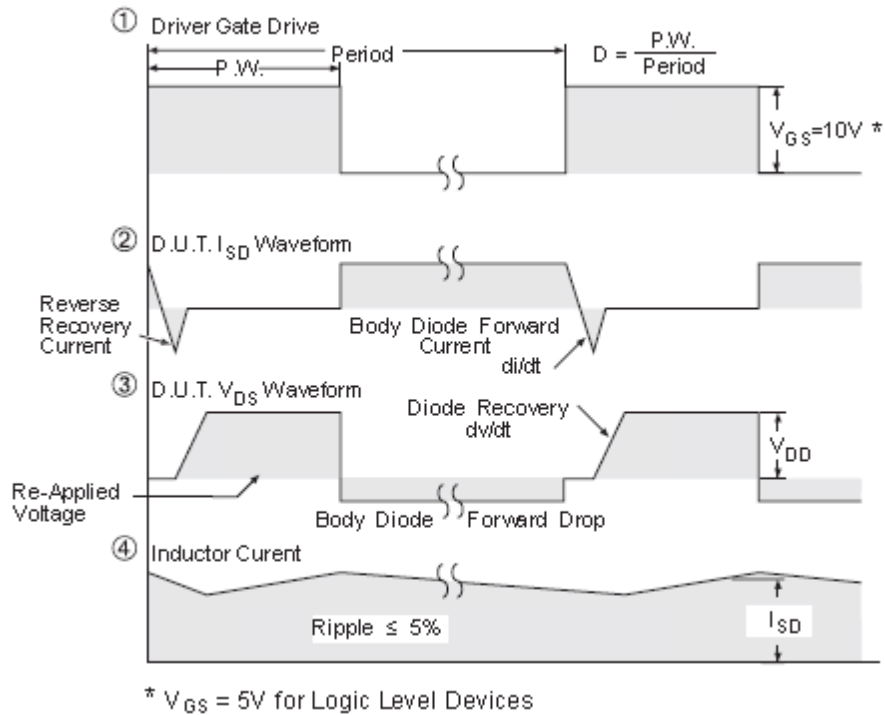
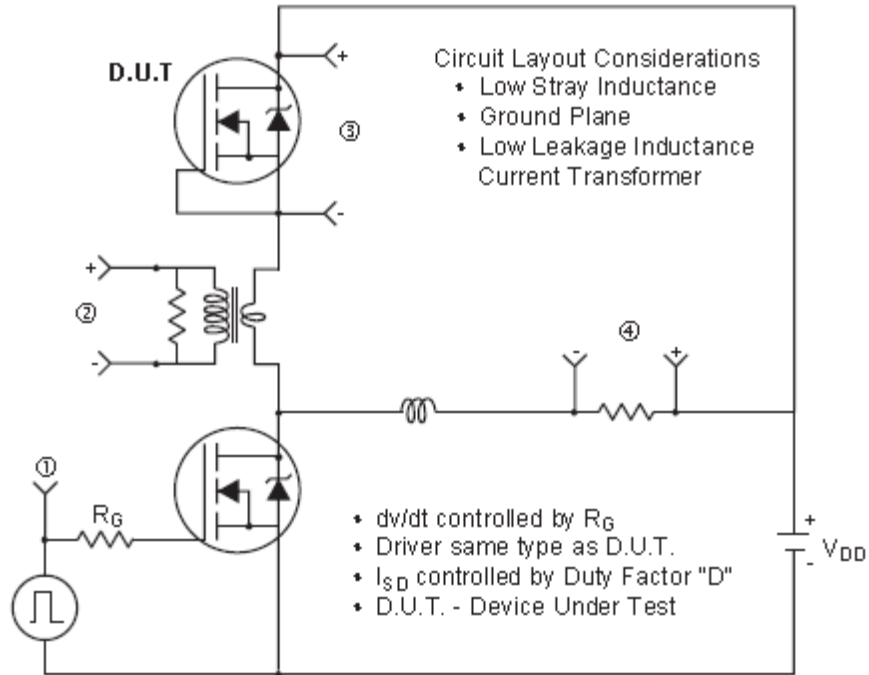
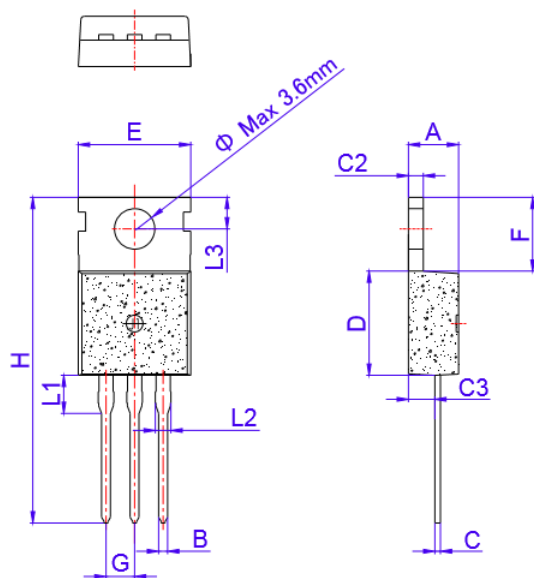


Figure 13. Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

Package Mechanical Data



TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

WFP540WP Product Description

Silicon N-Channel MOSFET



NOTE:

1. We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
2. Please do not exceed the absolute maximum ratings of the device when circuit designing.
3. Winsemi Microelectronics Co., Ltd reserved the right to make changes in this specification sheet and is subject to change without prior notice.

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