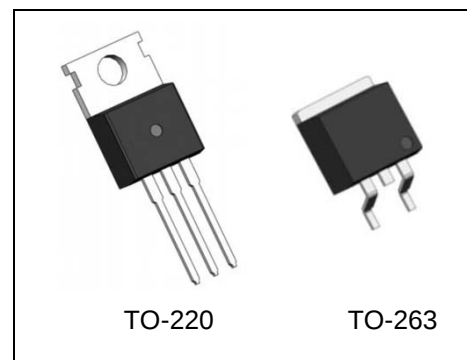
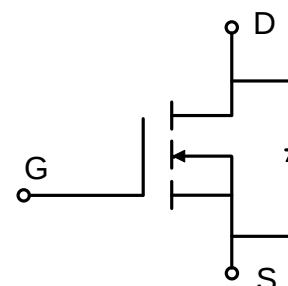


Features

- $R_{DS(on)}=3.7m\Omega(\text{typ.}) @V_{GS}=10V$
- 100% UIS tested
- Reliable and Rugged
- RoHS compliant



Type	Package	Marking
WMK115N10T1	TO-220	WMK115N10T1
WMM115N10T1	TO-263	WMM115N10T1



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	100	V
Continuous drain current ($T_C = 25^\circ\text{C}$)	I_D	115	A
($T_C = 100^\circ\text{C}$)		85	A
Pulsed drain current ¹⁾	I_{DM}	420	A
Gate-source voltage	V_{GS}	± 20	V
Avalanche energy, single pulse ²⁾	E_{AS}	230	mJ
Power dissipation ($T_C = 25^\circ\text{C}$)	P_D	273	W
($T_C = 100^\circ\text{C}$)		136	W
Operating and storage temperature range	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$
Continuous diode forward current	I_S	115	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	0.55	$^\circ\text{C/W}$
Thermal resistance, junction-to-ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

Electrical Characteristics $T_c = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =0.25mA	100	-	-	V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =0.25mA	2.0	3.0	4.0	V
Drain cut-off current	I _{DSS}	V _{DS} =100V, V _{GS} =0 V, T _J = 25°C T _J = 85°C	- -	- -	1 10	μA
Gate leakage current, forward	I _{GSSF}	V _{GS} =+20V, V _{DS} =0V	-	-	100	nA
Gate leakage current, reverse	I _{GSSR}	V _{GS} =-20V, V _{DS} =0V	-	-	-100	nA
Drain-source on-state resistance	R _{DS(on)} ³⁾	V _{GS} =10V, I _D =50A	-	3.7	4.5	mΩ
Gate resistance	R _G	f=1 MHz, open drain	-	0.7	-	Ω
Dynamic characteristics						
Input capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz	-	6771	-	pF
Output capacitance	C _{oss}		-	550	-	
Reverse transfer capacitance	C _{rss}		-	32	-	
Turn-on delay time	t _{d(on)}	V _{DD} =50V, V _{GS} =10V, R _G = 3Ω, I _D =20A	-	33	-	ns
Rise time	t _r		-	21	-	
Turn-off delay time	t _{d(off)}		-	58	-	
Fall time	t _f		-	22	-	
Gate charge characteristics						
Gate to source charge	Q _{gs}	V _{DD} =80V, I _D =20A, V _{GS} =0 to 10 V	-	24	-	nC
Gate to drain charge	Q _{gd}		-	13.5	-	
Gate charge total	Q _g		-	90	-	
Reverse diode characteristics ⁴⁾						
Diode forward voltage	V _{SD} ³⁾	V _{GS} =0V, I _F =50A	-	0.8	1	V
Reverse recovery time	t _{rr}	V _{GS} =0V, I _F =20A,	-	50	-	ns
Reverse recovery charge	Q _{rr}	dl _F /dt=100 A/μs	-	180	-	nC

Notes:

1. Repetitive rating: pulse width limited by maximum junction temperature.
2. $L = 0.5mH, V_{DD} = 80V$, starting $T_J = 25^\circ\text{C}$.
3. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Electrical Characteristics Diagrams

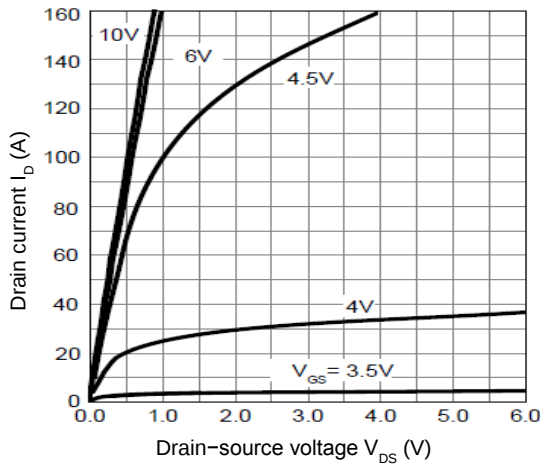


Figure 1. On-Region Characteristics

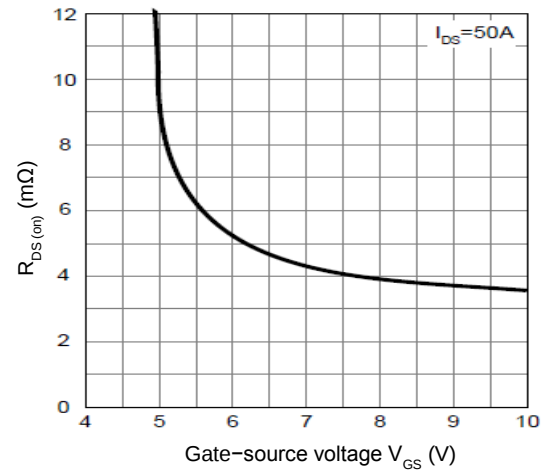


Figure 2. On-Resistance Variation vs. Threshold Voltage

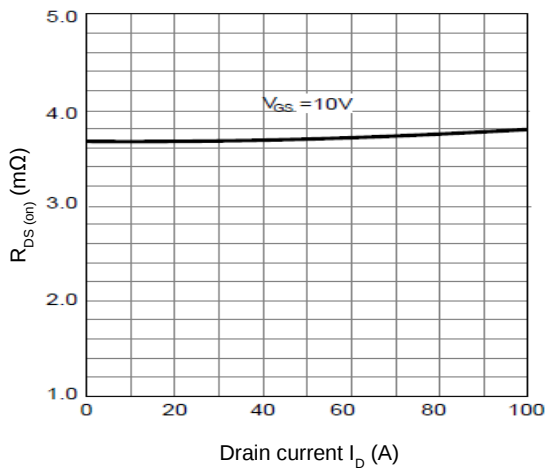


Figure 3. On-Resistance Variation vs. Drain Current

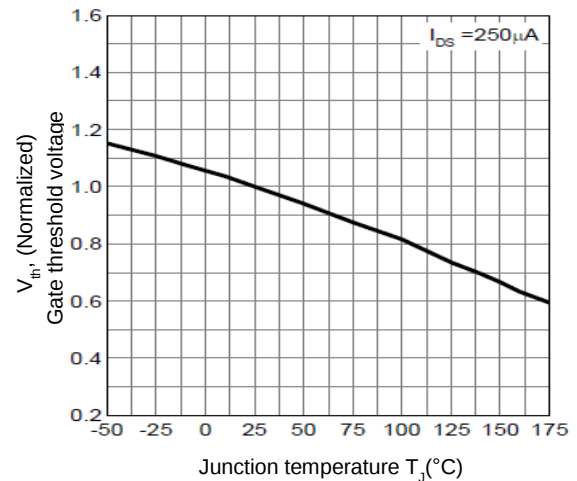


Figure 4. Threshold Voltage vs. Temperature

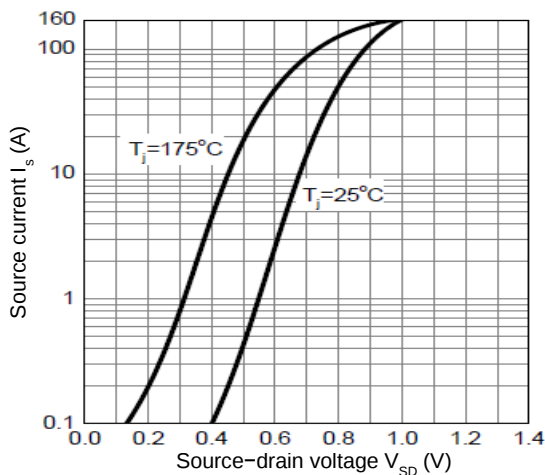


Figure 5. Source Current Variation vs. Source-drain Voltage

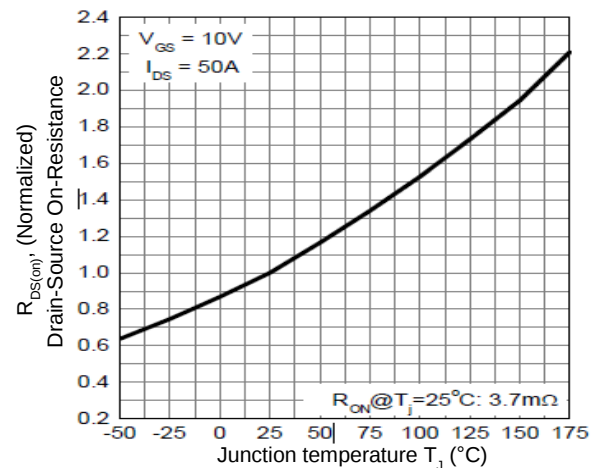


Figure 6. On-Resistance vs. Temperature

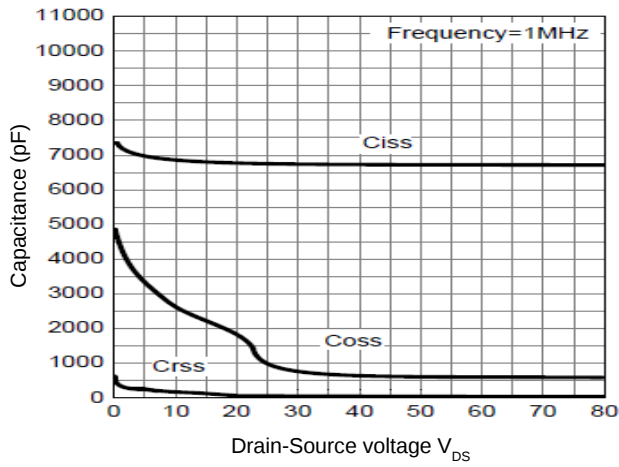


Figure 7. Capacitance Characteristics

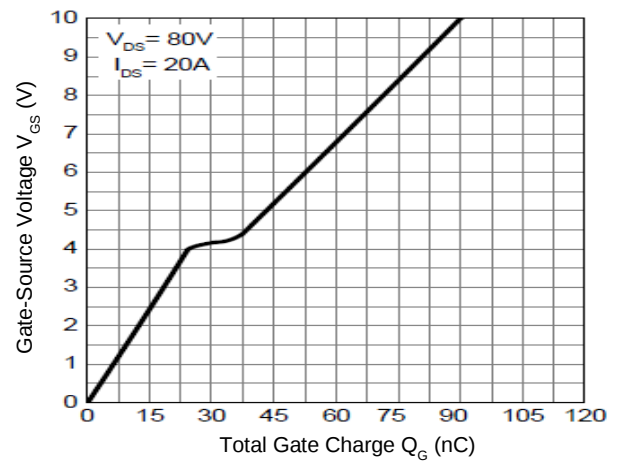


Figure 8. Gate Charge Characteristics

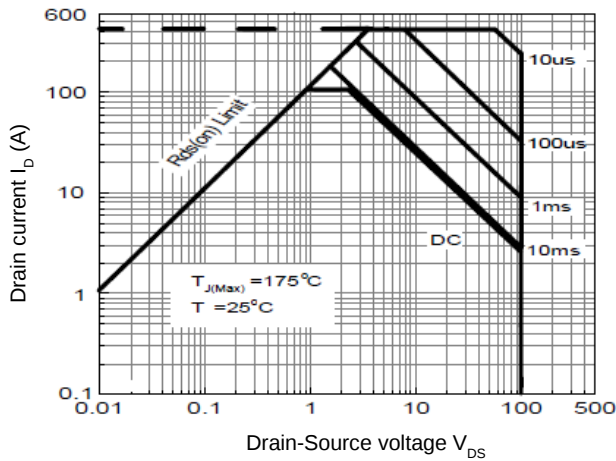


Figure 9. Maximum Safe Operating Area

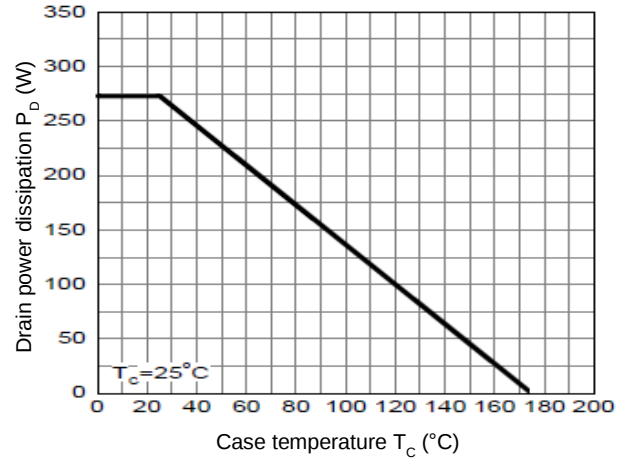


Figure 10. Power Dissipation vs. Case Temperature

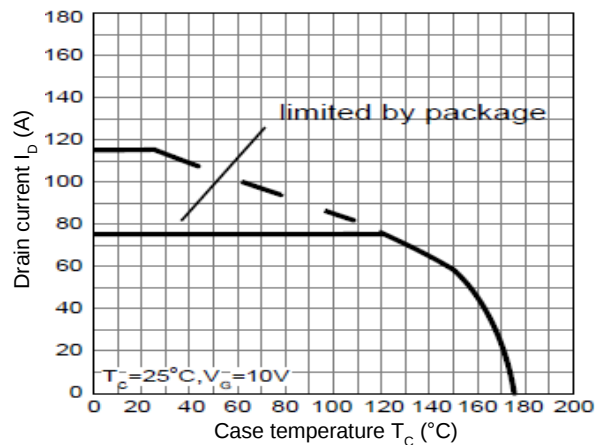


Figure 11. Drain Current vs. Case Temperature

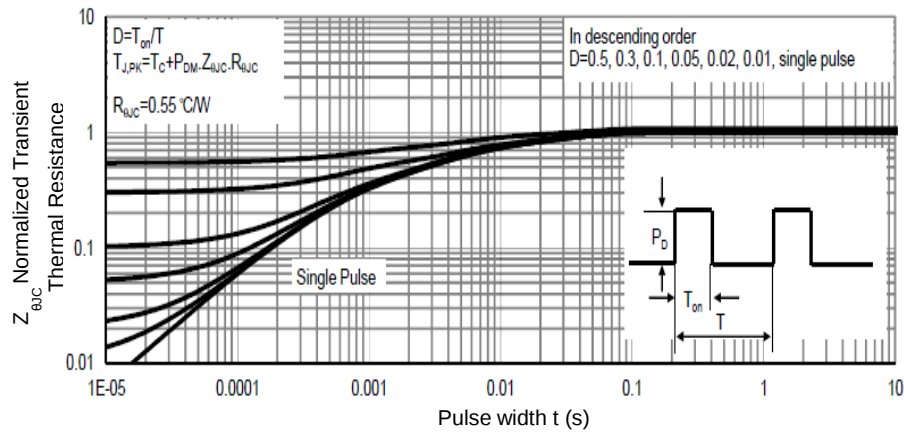
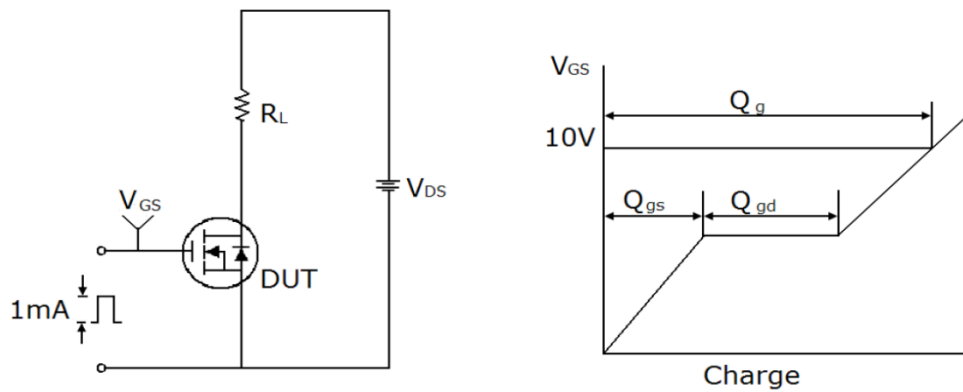
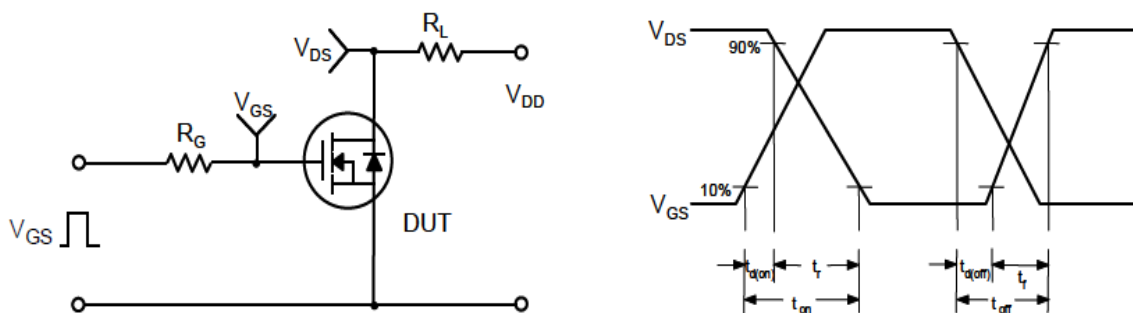


Figure 11. Transient Thermal Response Curve

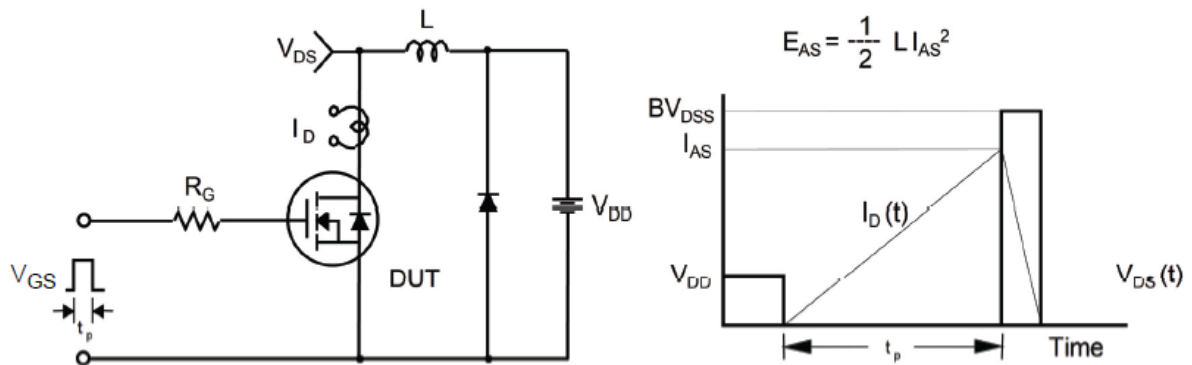
Gate Charge Test Circuit & Waveform



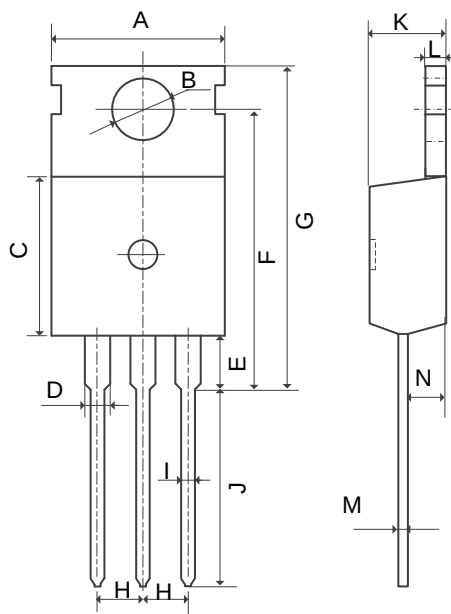
Switching Test Circuit & Waveforms



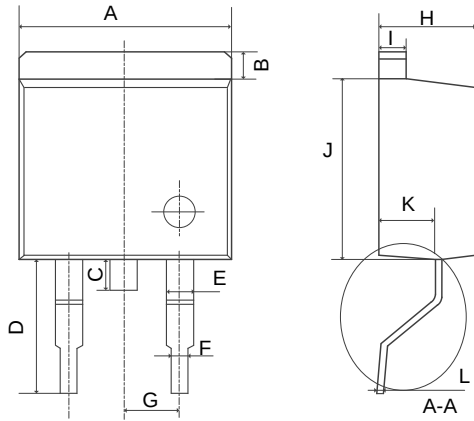
Unclamped Inductive Switching Test Circuit & Waveforms



Mechanical Dimensions for TO-220



SYMBOL	MM	
	MIN	MAX
A	9.70	10.10
B	3.50	3.70
C	9.00	9.40
D	1.17	1.47
E	2.80	3.20
F	15.80	16.20
G	18.95MAX	
H	2.44	2.64
I	0.70	0.90
J	9.78	10.38
K	4.30	4.70
L	1.20	1.40
M	0.40	0.60
N	2.25	2.55

Mechanical Dimensions for TO-263


SYMBOL	MM	
	MIN	MAX
A	10.00	10.40
B	1.11	1.41
C	1.25	1.55
D	5.10	5.50
E	1.12	1.42
F	0.71	0.91
G	2.39	2.69
H	4.49	4.89
I	1.17	1.37
J	8.45	8.85
K	2.54	2.84
L	0.28	0.48

Ordering Information

Part	Package	Marking	Packing method	Quantity
WMK115N10T1	TO-220	WMK115N10T1	Tube	50
WMM115N10T1	TO-263	WMM115N10T1	Tape and Reel	800

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