1. Product Information

1.1 Features

- ☑ Advanced trench cell design
- ☑ Low Thermal Resistance

1.2 Applications

- ☑ Motor drivers
- ☑ DC - DC Converter

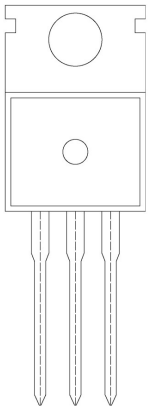
1.3 Quick reference

- ☑ BV ≧ 150 V
- ☑ P_{tot} ≦ 312 W
- ☑ I_D ≦ 155 A
- ☑ $R_{DS(ON)}$ ≦ 5.5 mΩ@ V_{GS} = 10 V
- ☑ $R_{DS(ON)}$ ≦ 7.0 mΩ@ V_{GS} = 6 V

2. Pin Description

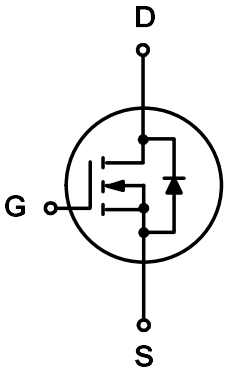
Pin	Description
1	Gate (G)
2	Drain (D)
3	Source (S)

Simplified Outline



Top View
TO-220C-3L

Symbol



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3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C = 25 ℃	-	150	V
V_{GS}	Gate-Source Voltage	T_C = 25 ℃	-	±20	V
I_D*,***	Drain Current (DC)	T_C = 25 ℃, V_{GS} = 10 V	-	155	A
		T_C = 100 ℃, V_{GS} = 10 V	-	98	A
I_{DM}*	Drain Current (Pulsed)	T_C = 25 ℃, V_{GS} = 10 V	-	380	A
P_{tot}	Drain power dissipation	T_C = 25 ℃	-	312	W
T_{stg}	Storage Temperature		-55	150	℃
T_J	Junction Temperature		-	150	℃
I_S	Continuous-Source Current	T_C = 25 ℃	-	155	A
E_{AS}	Single Pulsed Avalanche Energy	V_{DD}=50V , L=1.0mH	-	1250	mJ
$R_{\theta JA}$**	Thermal Resistance- Junction to Ambient		-	42	℃/W
$R_{\theta JC}$**	Thermal Resistance- Junction to Case		-	0.4	

Notes：

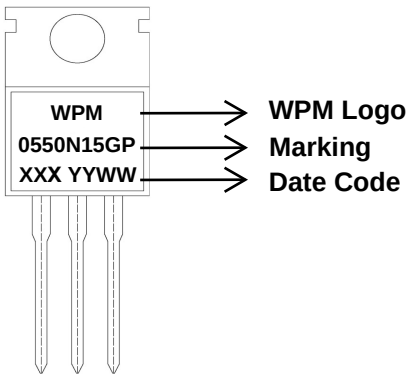
* Pulse width ≤ 300 μs, duty cycle ≤ 2 %

** Surface Mounted on 1 in^2 pad area, t ≤ 10 sec

*** Limited by bonding wire

4. Marking Information

Product Name	Marking
WTM0550N15GP	WPM 0550N15GP XXX YYWW



5. Ordering Code

Product Name	Package	Quantity
WTM0550N15GP	**TO220C**	**50**

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6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	150	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	2	-	4	V
I_{DSS}	Drain Leakage Current	V_{DS} = 120 V, V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS} = 0 V, V_{GS} = ± 20 V	-	-	±100	nA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 10 V, I_{DS} = 30 A	-	4.8	5.5	mΩ
		V_{GS} = 6 V, I_{DS} = 20 A	-	5.8	7.0	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 30 A, V_{GS} = 0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{DS} = 30 A, V_{GS} = 0 V dI_{SD}/dt = 100 A/μs	-	111	-	nS
Q_{rr}	Reverse Recovery Charge		-	381	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 75 V Frequency = 1 MHz	-	8218	-	pF
C_{oss}	Output Capacitance		-	572	-	
C_{rss}	Reverse Transfer Capacitance		-	23	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 75 V, V_{GEN} = 10 V, R_G = 3.9 Ω, R_L = 2.4 Ω, I_{DS} = 30 A	-	17	-	nS
t_r	Turn-on Rise Time		-	55	-	
t_d(off)	Turn-off Delay Time		-	57	-	
t_f	Turn-off Fall Time		-	57	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{DS} = 75 V, V_{GS} = 10 V, I_{DS} = 30 A	-	111	-	nC
Q_{gs}	Gate-Source Charge		-	43	-	
Q_{gd}	Gate-Drain Charge		-	14	-	

Notes：

a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

b : Guaranteed by design, not subject to production testing

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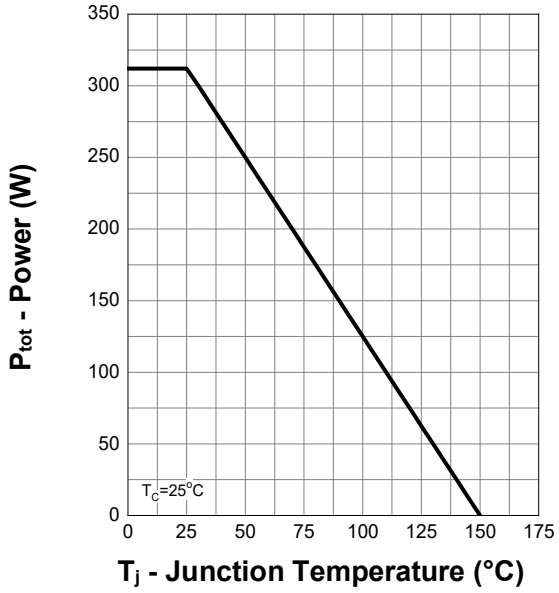
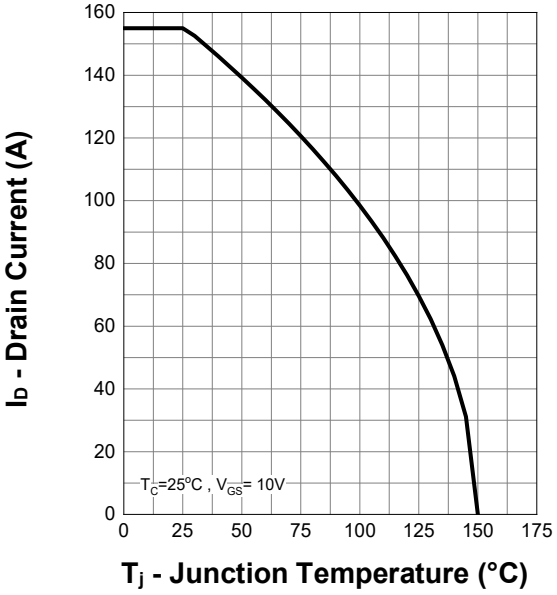
7. Typical Characteristics

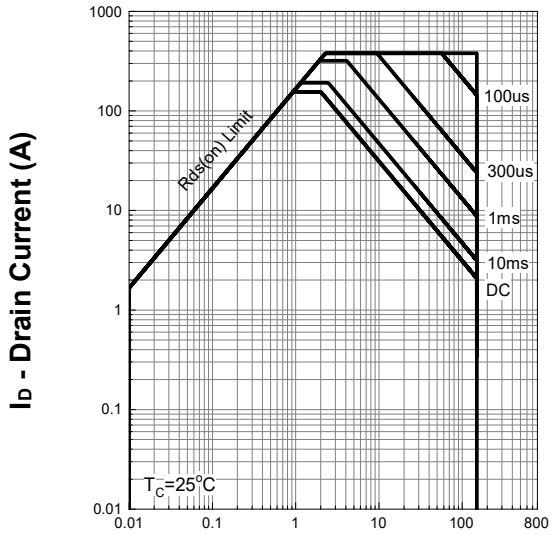
Power Capability



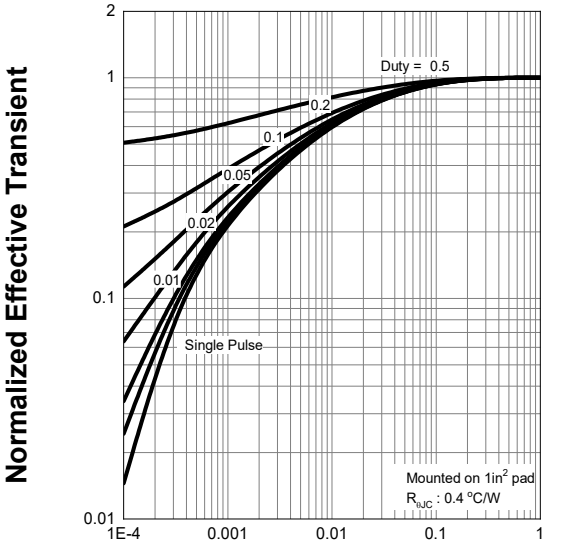
Current Capability



Safe Operating Area



Transient Thermal Impedance



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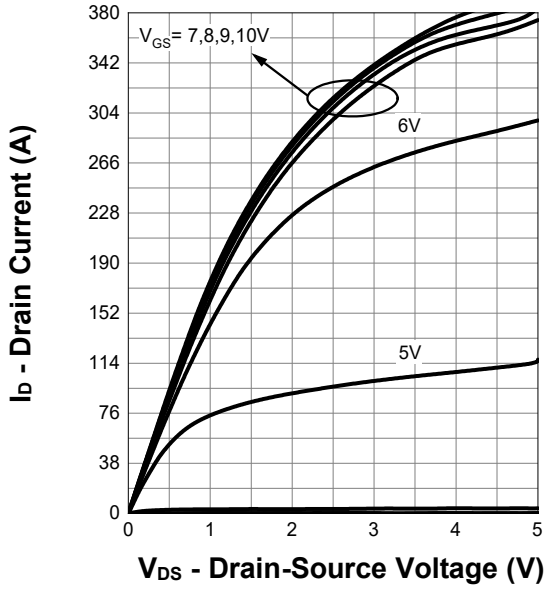
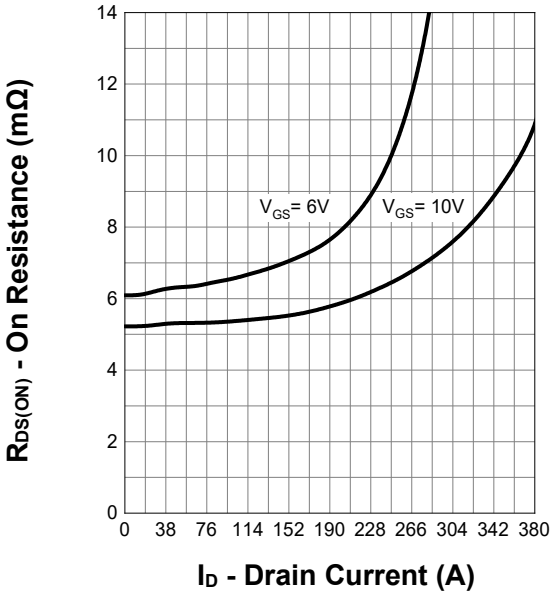
7. Typical Characteristics (cont.)

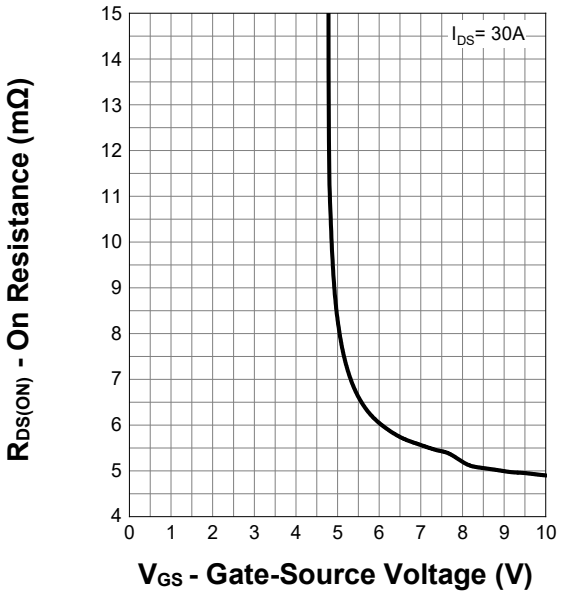
Output Characteristics



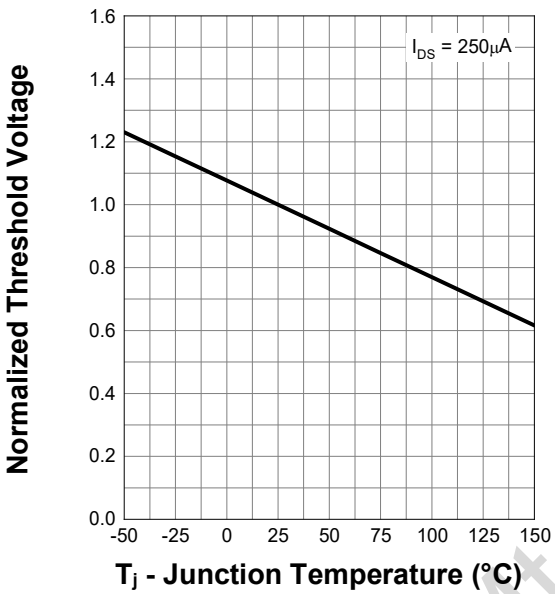
On Resistance



Transfer Characteristics



Normalized Threshold Voltage



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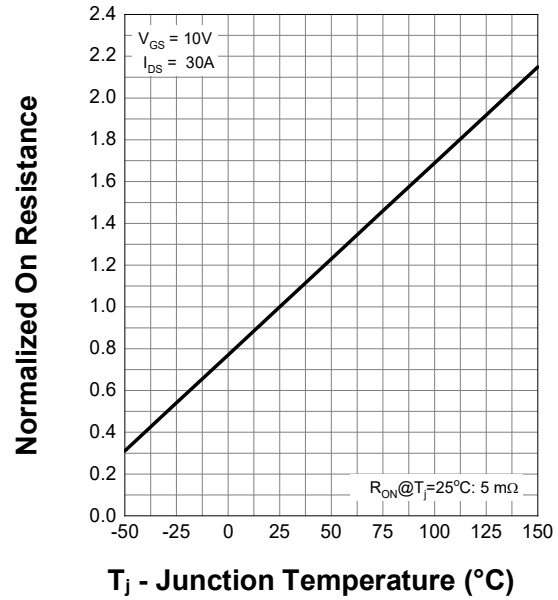
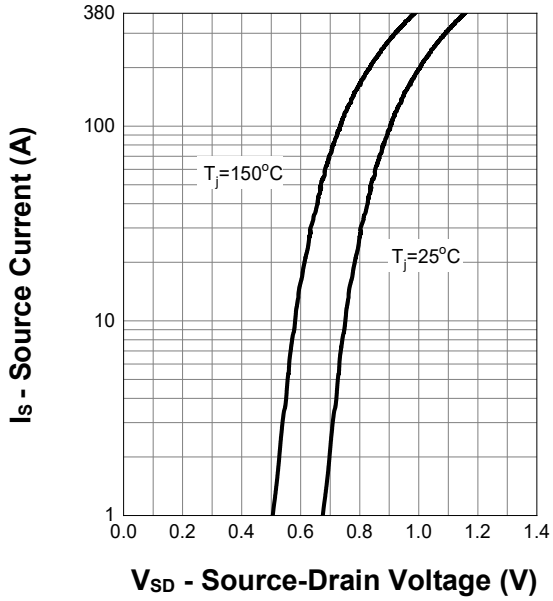
7. Typical Characteristics (cont.)

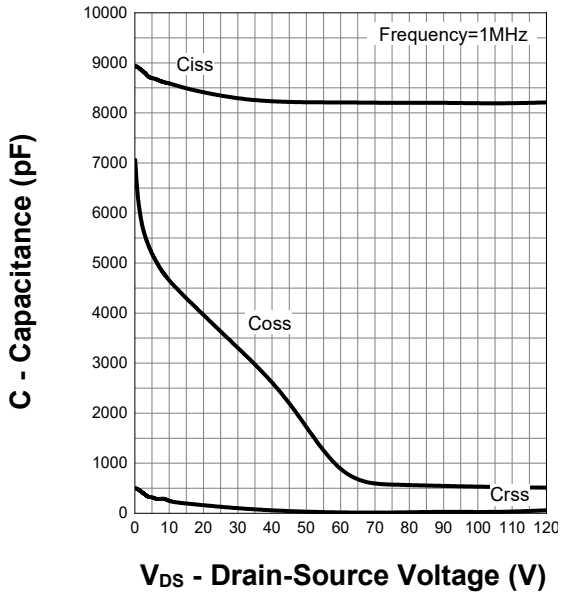
Normalized On Resistance



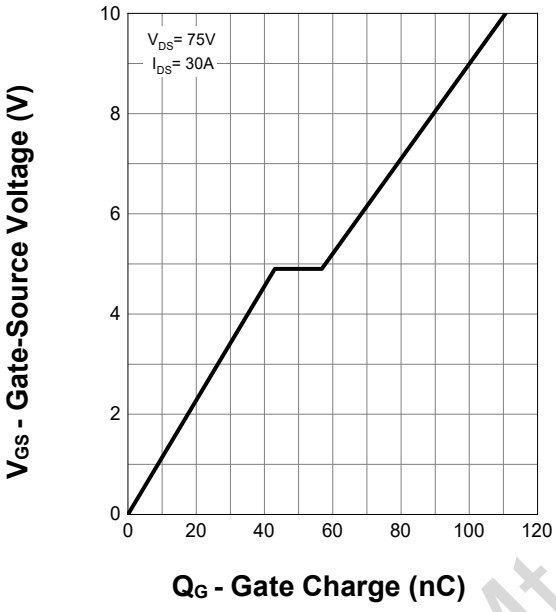
Diode Forward Current



Capacitance



Gate Charge



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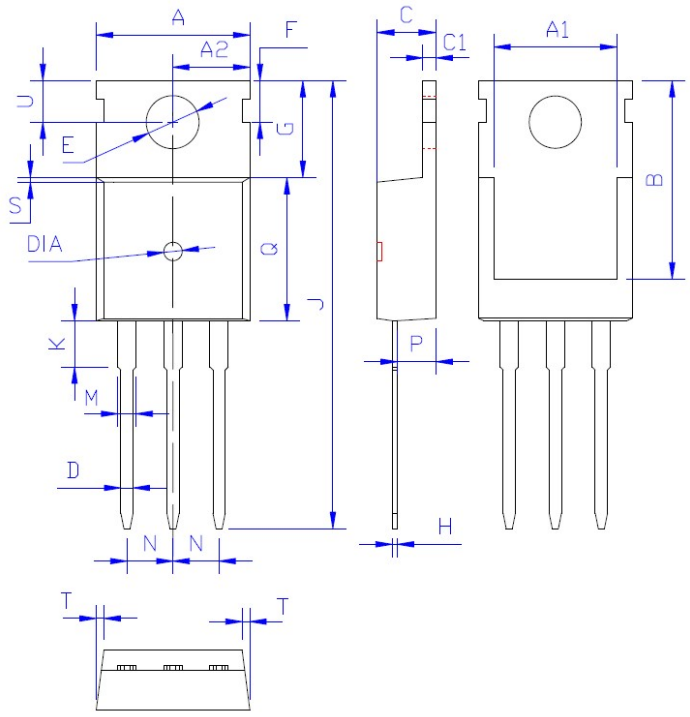
8. Package Dimensions

TO-220C-3L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	9.80	10.20
A1	7.80	8.20
A2	4.80	5.20
B	13.00	13.40
C	4.35	4.65
C1	1.15	1.45
D	0.65	0.95
E	3.45	3.75
F	2.85	3.15
G	6.40	6.80
H	0.35	0.65
J	28.68	29.08
K	2.80	3.20
M	1.15	1.45
N	TYP2.54	
P	2.20	2.60
Q	9.00	9.40
S	015	0.35
T	0.15	0.35
U	2.65	2.95
DIA	2.5±0.1 MAX0.5	

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