
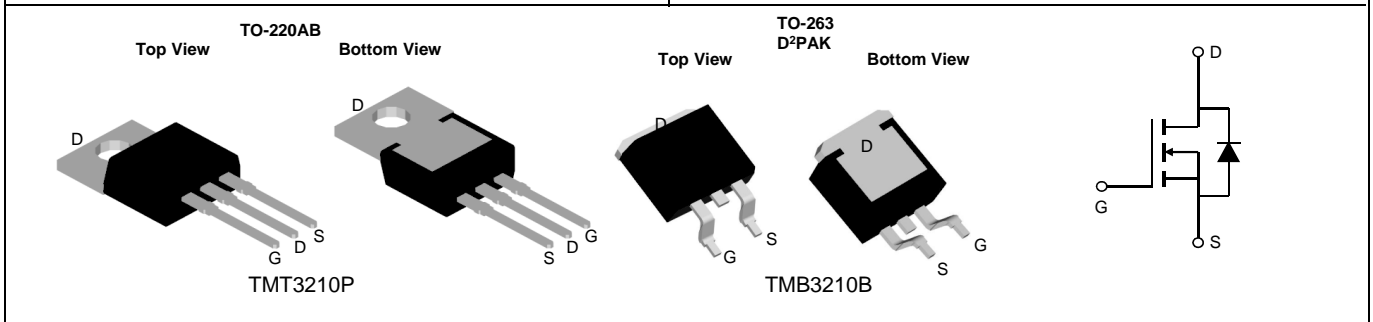




TMT3210P / TMB3210B N-CHANNEL POWER MOSFET

<p>General Description</p> <ul style="list-style-type: none"> ● Power Switching application ● Uninterruptible Power Supply 	<p>Product Summary</p> <ul style="list-style-type: none"> ● 100V/120A ● $R_{DS(ON)}=6.8m\Omega(\text{typ.}) @V_{GS} = 10V$ ● 100% Avalanche Tested ● Reliable and Rugged ● Lead-Free and Green Devices Available (RoHS Compliant) <p>100% UIS Tested 100% R_g Tested</p> 
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Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings (Tc=25°C Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	± 25	V
T_J	Maximum Junction Temperature	175	°C
T_{STG}	Storage Temperature Range	-55 to 175	°C
I_S	Source Current-Continuous(Body Diode)	$T_c=25^\circ\text{C}$ 120	A
Mounted on Large Heat Sink			
I_{DM}	Pulsed Drain Current *	$T_c=25^\circ\text{C}$ 480**	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ 120	A
		$T_c=100^\circ\text{C}$ 84	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 237	W
		$T_c=100^\circ\text{C}$ 119	W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.63	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient **	62.5	°C/W
E_{AS}	Single Pulsed-Avalanche Energy ***	$L=0.5mH$ 756***	mJ

Note: * Repetitive rating; pulse width limited by max. junction temperature.
 ** Surface mounted on FR-4 board.
 *** Limited by T_{Jmax} , starting $T_J=25^\circ\text{C}$, $L = 0.5mH$, $V_{DS}=80V$, $V_{GS}=10V$.

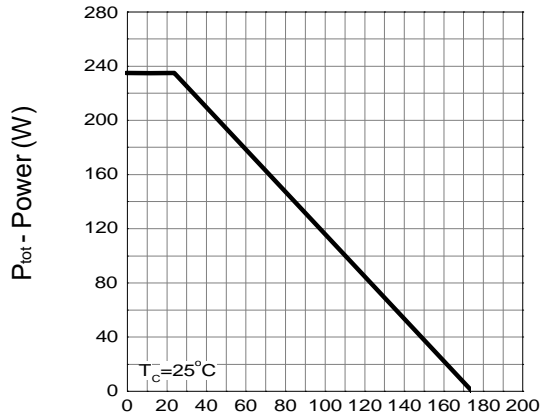
Electrical Characteristics (T_c =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	3210			Unit
			Min	Typ.	Max	
Static Characteristics						
B _{VDS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100	-	-	V
I _{DSS}	Drain-to-Source Leakage Current	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
		T _J =125°C	-	-	10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2.0	3.0	4.0	V
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)*}	Drain-Source On-State Resistance	V _{GS} =10V, I _{DS} =60A	-	6.8	8.5	mΩ
Diode Characteristics						
V _{SD*}	Diode Forward Voltage	I _{SD} =60A, V _{GS} =0V	-	0.8	1	V
t _{rr}	Reverse Recovery Time	I _{SD} =60A, dI _{SD} /dt=100A/μs	-	46	-	ns
Q _{rr}	Reverse Recovery Charge		-	98	-	nC
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1 MHz	-	1.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1.0MHz	-	4922	-	pF
C _{oss}	Output Capacitance		-	902	-	
C _{rss}	Reverse Transfer Capacitance		-	508	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, R _G =6Ω, I _{DS} =60A, V _{GS} =10V	-	23	-	ns
T _r	Turn-on Rise Time		-	35	-	
t _{d(OFF)}	Turn-off Delay Time		-	77	-	
T _f	Turn-off Fall Time		-	44	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} =10V, I _D =60A	-	120	-	nC
Q _{gs}	Gate-Source Charge		-	17	-	
Q _{gd}	Gate-Drain Charge		-	28	-	

Note: *Pulse test, pulse width ≤ 300us, duty cycle ≤ 2%

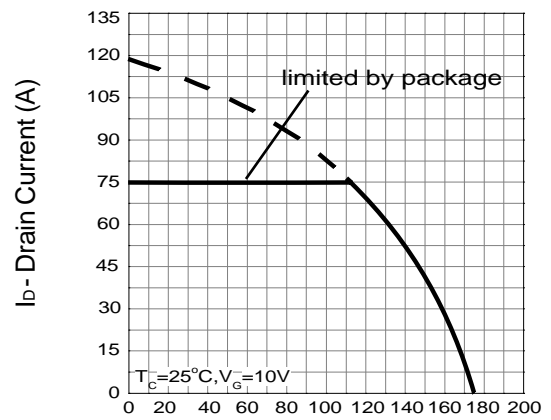
Typical Operating Characteristics

Power Dissipation



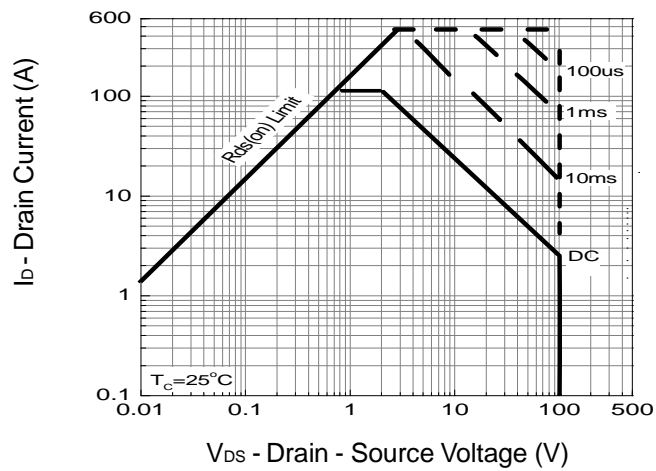
T_c - Case Temperature (°C)

Drain Current



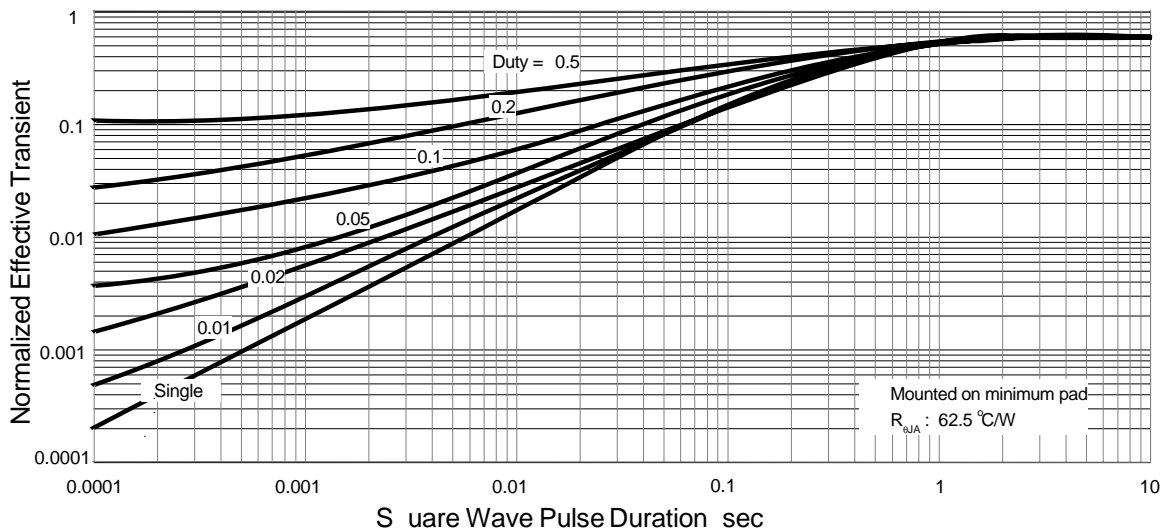
T_c - Case Temperature (°C)

Safe Operation Area



V_{DS} - Drain - Source Voltage (V)

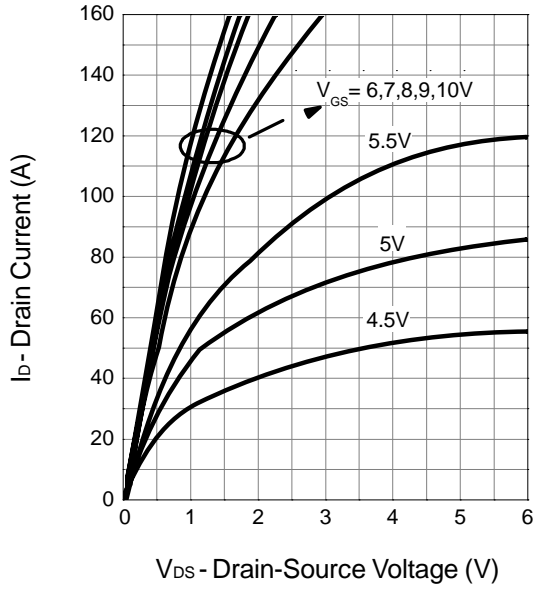
Thermal Transient Impedance



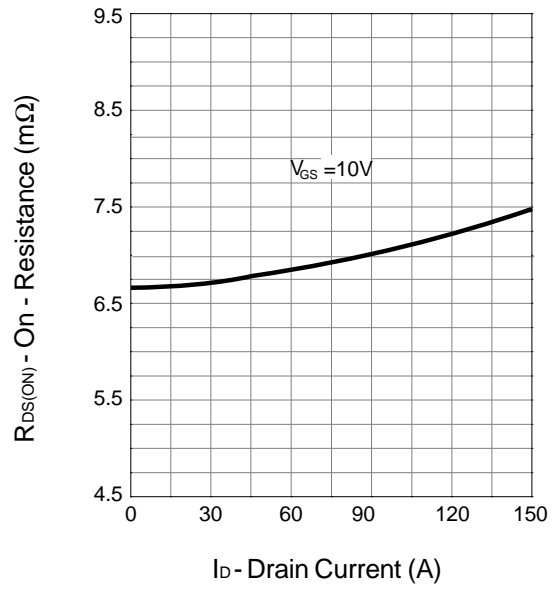
Square Wave Pulse Duration sec

Typical Operating Characteristics (Cont.)

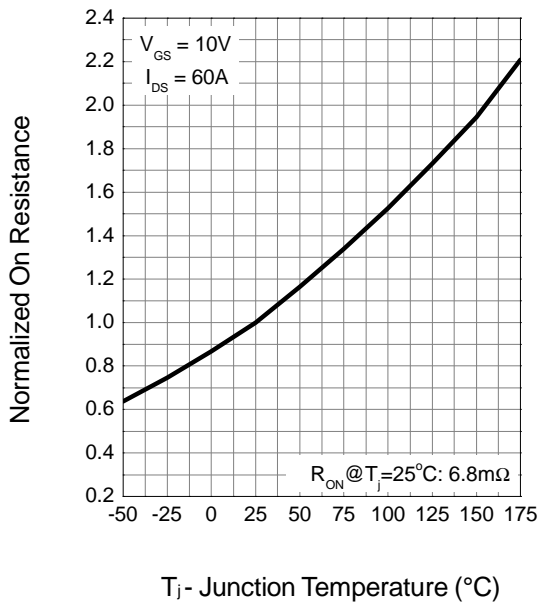
Output Characteristics



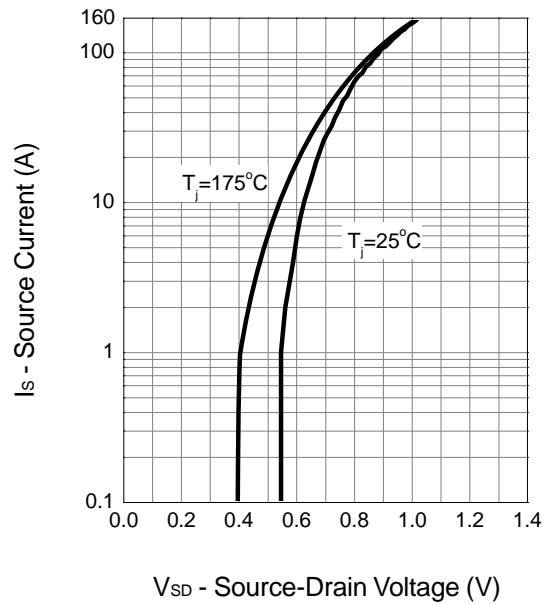
Drain-Source On Resistance



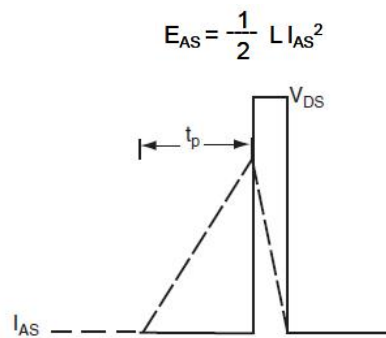
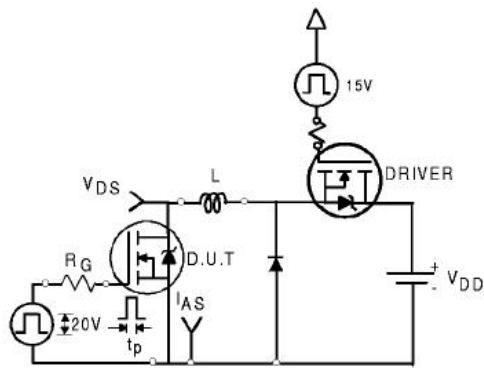
Drain-Source On Resistance



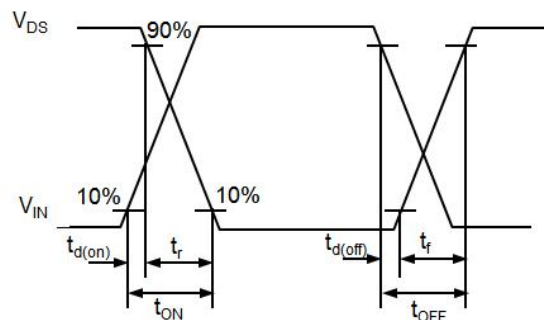
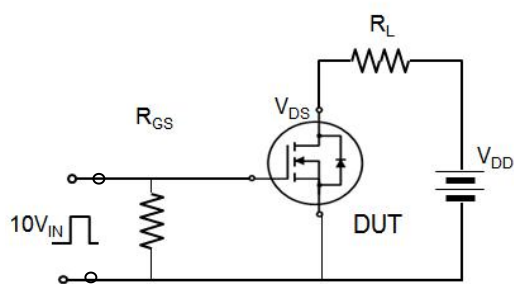
Source-Drain Diode Forward



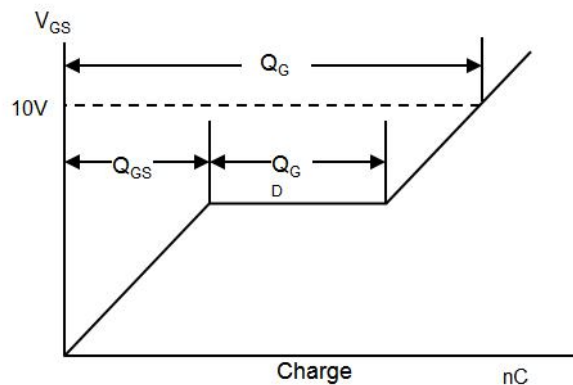
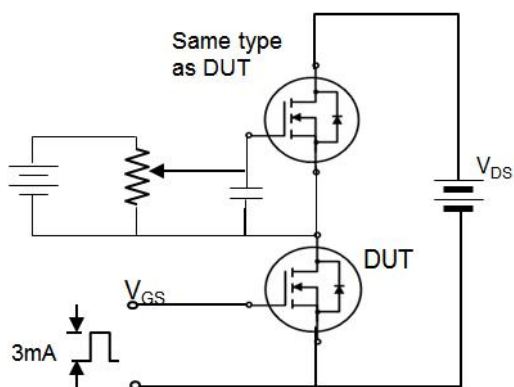
Avalanche Test Circuit



Switching Time Test Circuit

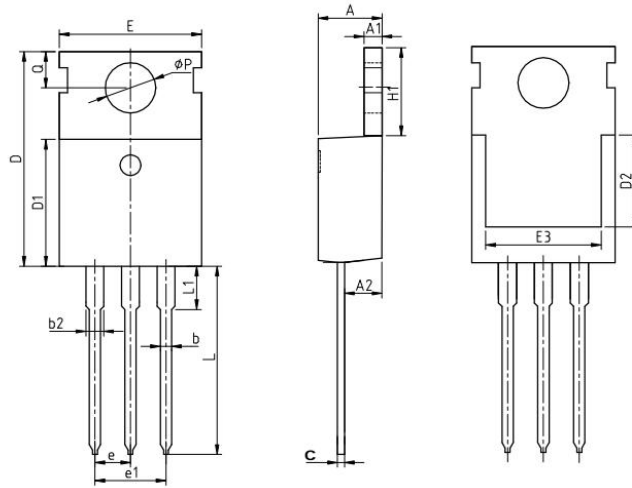


Gate Charge Test Circuit



Package Information

TO-220AB

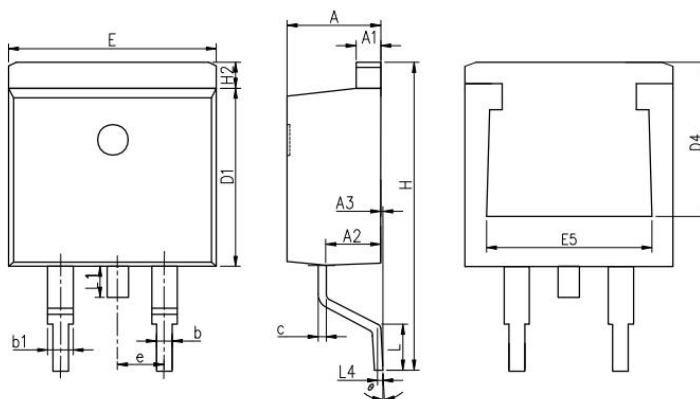


COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.25	1.30	1.45
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b2	1.17	1.27	1.47
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50	-	-
E	9.70	10.00	10.30
E3	7.00	-	-
e	2.54 BSC		
e1	5.08 BSC		
H1	6.25	6.50	6.85
L	12.75	13.50	13.80
L1	-	3.10	3.40
ΦP	3.40	3.60	3.80
Q	2.60	2.80	3.00

Package Information

TO-263



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.22	1.27	1.42
A2	2.49	2.69	2.89
A3	0	0.13	0.25
b	0.7	0.81	0.96
b1	1.17	1.27	1.47
c	0.3	0.38	0.53
D1	8.5	8.7	8.9
D4	6.6	-	-
E	9.86	10.16	10.36
E5	7.06	-	-
e	2.54 BSC		
H	14.7	15.1	15.5
H2	1.07	1.27	1.47
L	2	2.3	2.6
L1	1.4	1.55	1.7
L4	0.25 BSC		
θ	0°	5°	9°