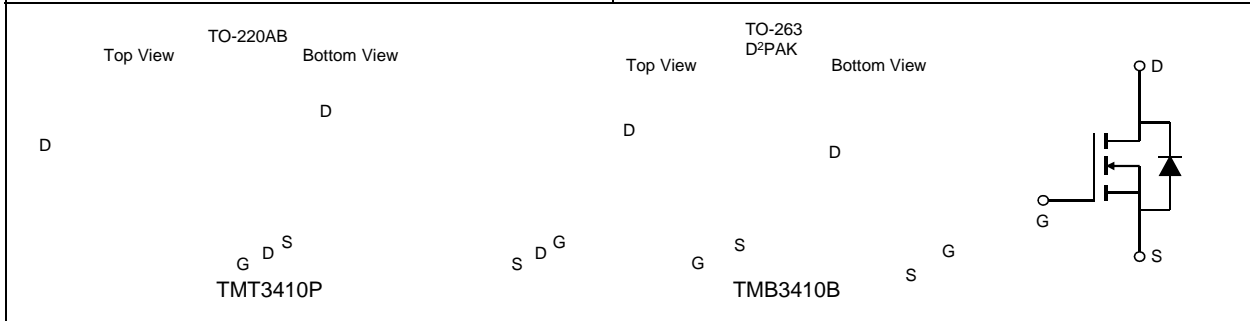


TMT3410P / TMB3410B N-CHANNEL POWER MOSFET

General Description <ul style="list-style-type: none"> Switching application Power Management for Inverter Systems. 	Product Summary <ul style="list-style-type: none"> 100V/140A $R_{DS(ON)} = 6.2 \text{ m}\Omega$ (typ.) @ $V_{GS}=10\text{V}$ 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 ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	± 25	
T_J	Maximum Junction Temperature	175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 140	A
Mounted on Large Heat Sink			
I_{DM}	Pulsed Drain Current *	$T_C=25^\circ\text{C}$ 550**	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ 140	A
		$T_C=100^\circ\text{C}$ 100	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 285	W
		$T_C=100^\circ\text{C}$ 143	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.53	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	
Avalanche Ratings			
E_{AS}	Avalanche Energy, Single Pulsed	$L=0.5\text{mH}$ 992***	mJ

Note : * Repetitive rating ; pulse width limited by junction temperature
 ** Drain current is limited by junction temperature
 *** $V_D=80\text{V}$

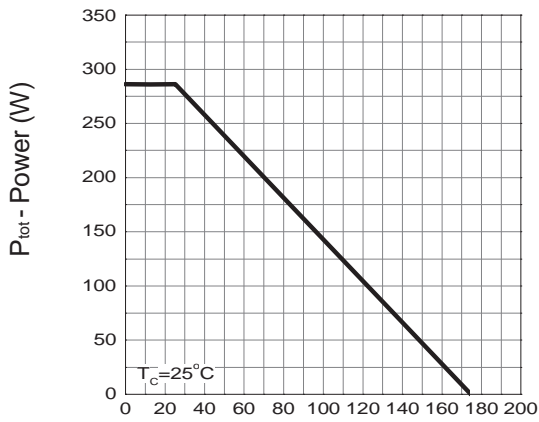
Electrical Characteristics (T_c = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	3410			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	10	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2.0	3.0	4.0	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)*}	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =70A	-	6.2	7.5	mΩ
Diode Characteristics						
V _{SD*}	Diode Forward Voltage	I _{SD} =70A, V _{GS} =0V	-	0.8	1	V
t _{rr}	Reverse Recovery Time	I _{SD} =70A, di _{SD} /dt=100A/μs	-	65	-	ns
Q _{rr}	Reverse Recovery Charge		-	103	-	nC
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1.0MHz	-	6140	-	pF
C _{oss}	Output Capacitance		-	943	-	
C _{riss}	Reverse Transfer Capacitance		-	490	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, R _G = 6 Ω, I _{DS} =70A, V _{GS} =10V,	-	23	-	ns
T _r	Turn-on Rise Time		-	39	-	
t _{d(OFF)}	Turn-off Delay Time		-	86	-	
T _f	Turn-off Fall Time		-	46	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} =10V, I _{DS} =70A	-	130	-	nC
Q _{gs}	Gate-Source Charge		-	25	-	
Q _{gd}	Gate-Drain Charge		-	32	-	

Note * : Pulse test ; pulse width ≤300μs, duty cycle ≤2%.

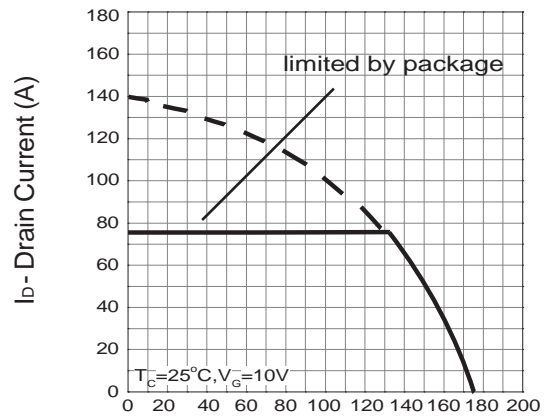
Typical Operating Characteristics

Power Dissipation



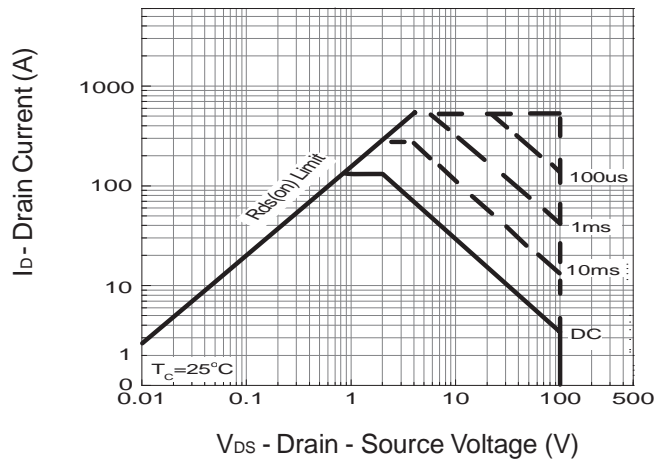
T_c - Case Temperature (°C)

Drain Current



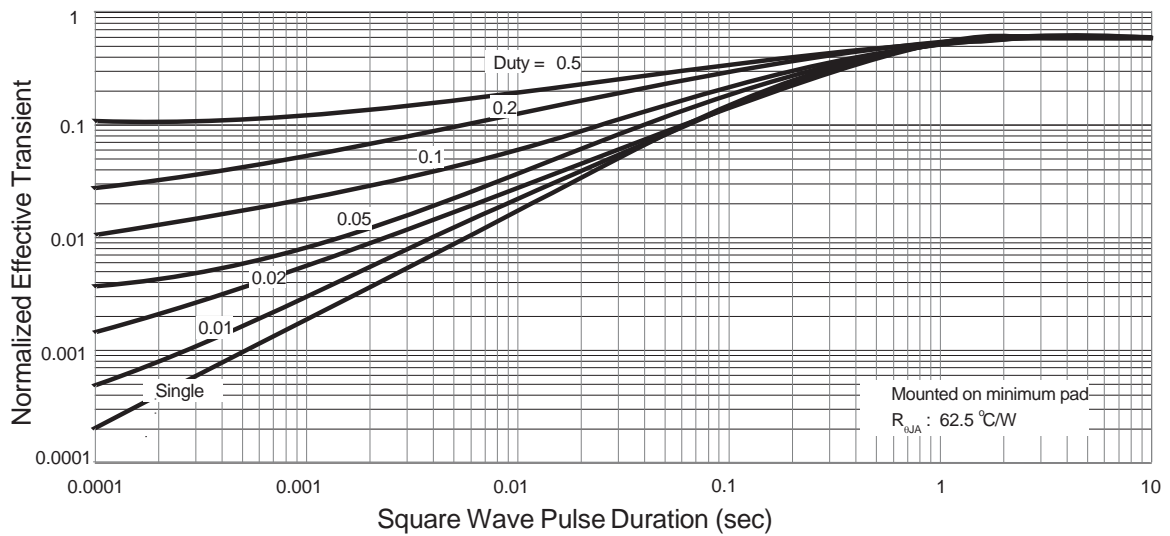
T_c - Case Temperature (°C)

Safe Operation Area

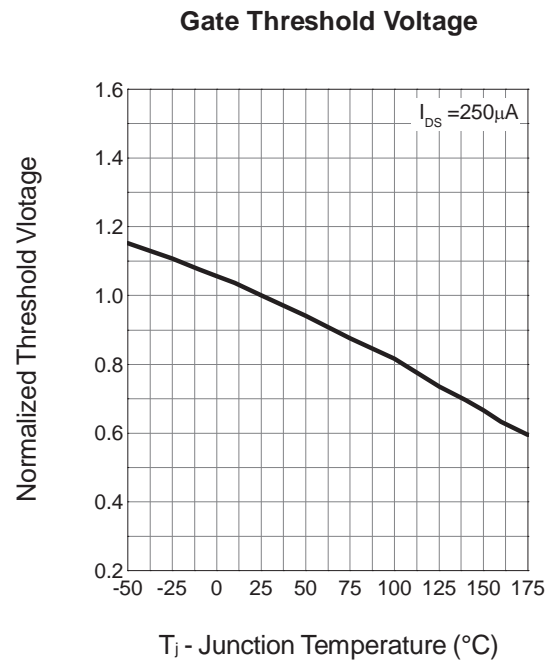
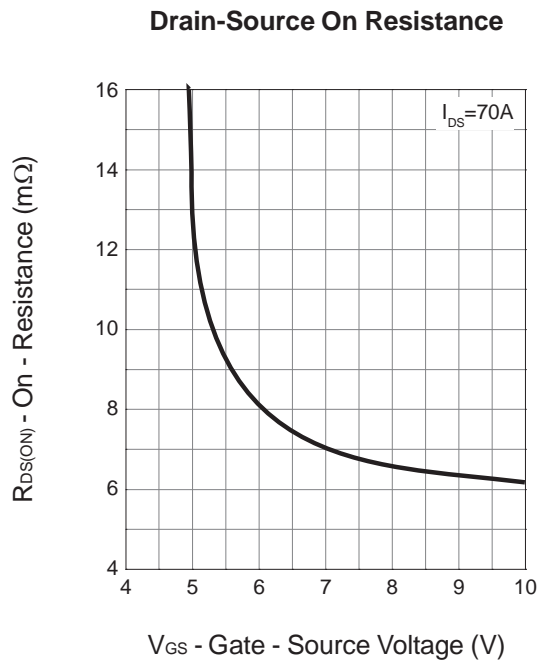
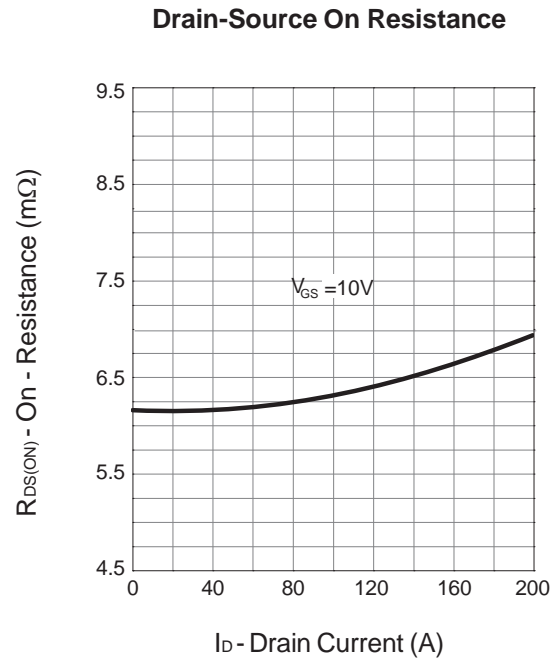
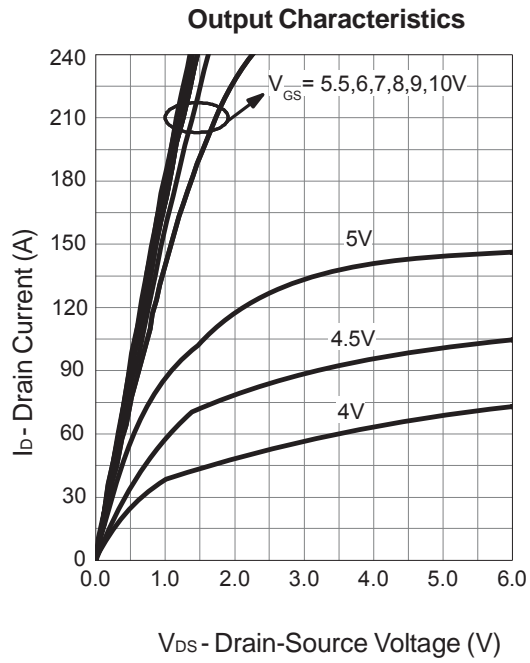


V_{DS} - Drain - Source Voltage (V)

Thermal Transient Impedance

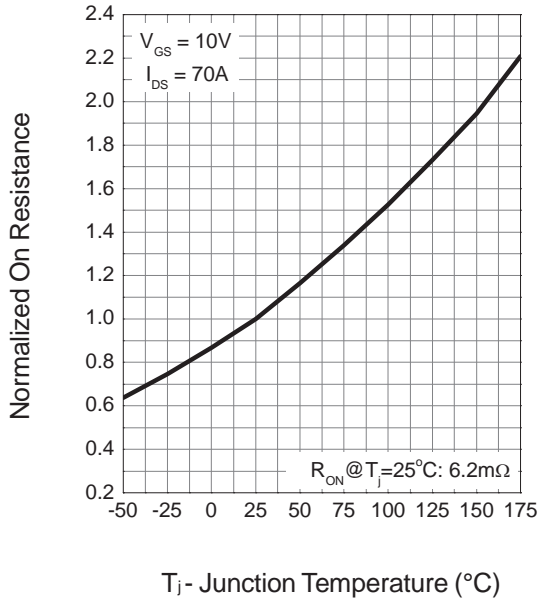


Typical Operating Characteristics (Cont.)

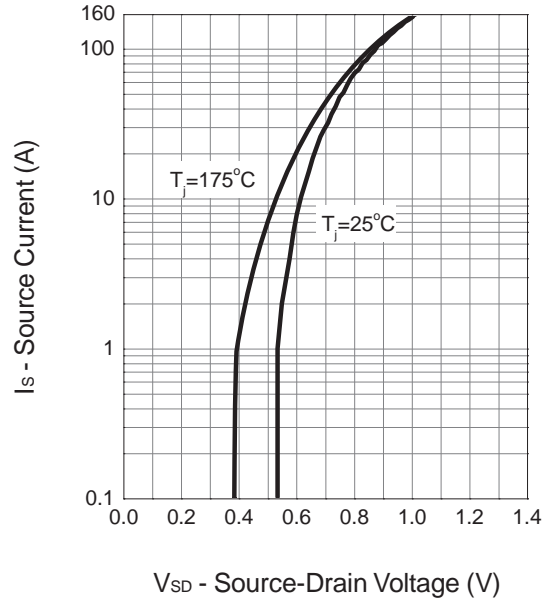


Typical Operating Characteristics (Cont.)

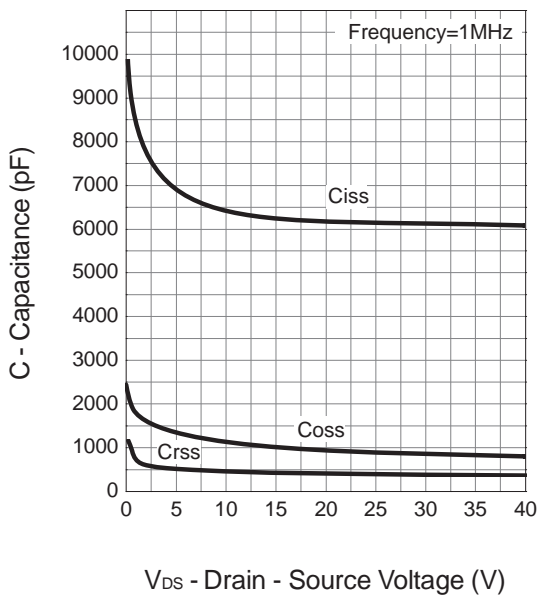
Drain-Source On Resistance



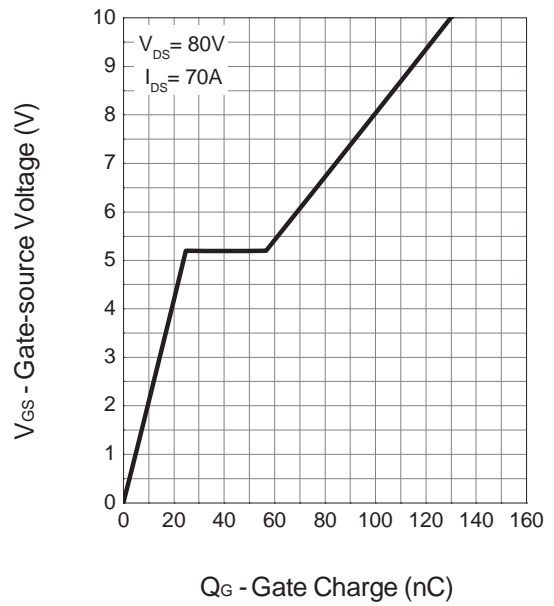
Source-Drain Diode Forward



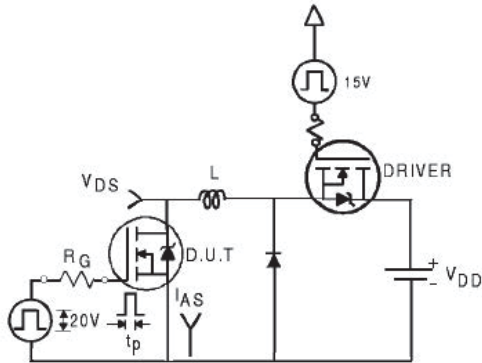
Capacitance



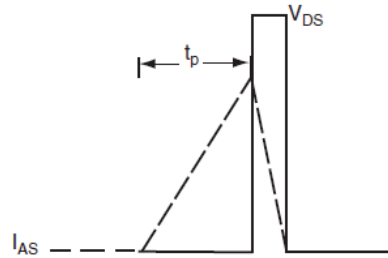
Gate Charge



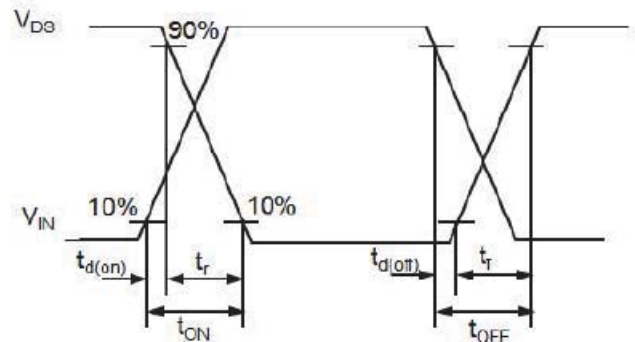
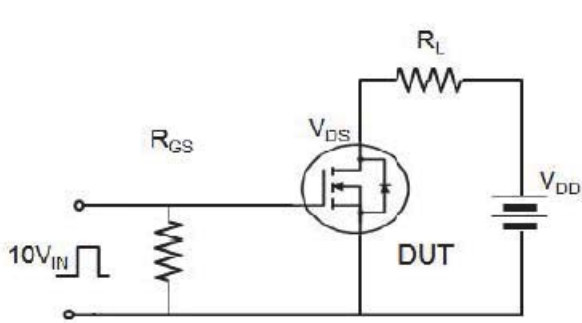
Avalanche Test Circuit



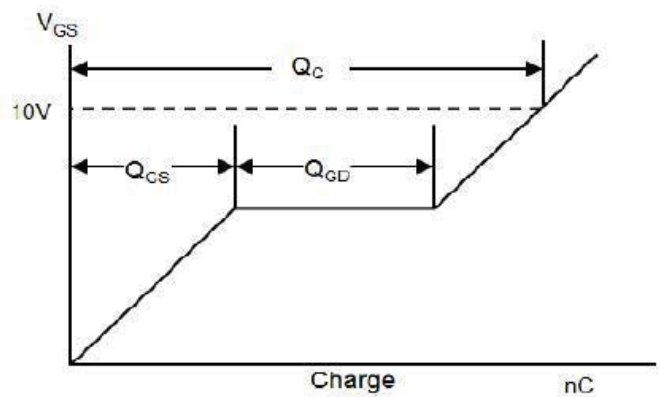
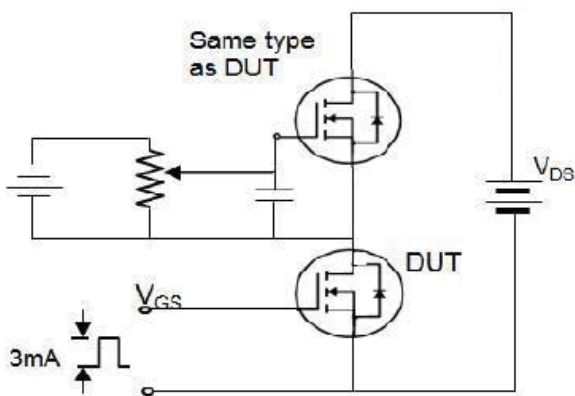
$$E_{AS} = \frac{1}{2} L I_{AS}^2$$



Switching Time Test Circuit



Gate Charge Test Circuit



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