

TMT1606P

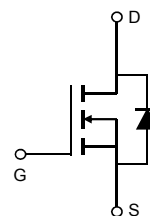
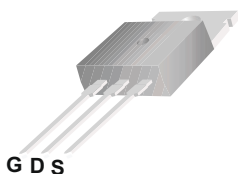
N-CHANNEL POWER MOSFET

General Description The TMT1606P uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.	Product Summary <table> <tr> <td>V_{DS}</td><td>60V</td></tr> <tr> <td>I_D (at $V_{GS}=10V$)</td><td>66A</td></tr> <tr> <td>$R_{DS(ON)}$ (at $V_{GS}=10V$)</td><td>< 12.5mΩ</td></tr> </table> 100% UIS Tested 100% R_g Tested	V_{DS}	60V	I_D (at $V_{GS}=10V$)	66A	$R_{DS(ON)}$ (at $V_{GS}=10V$)	< 12.5m Ω
V_{DS}	60V						
I_D (at $V_{GS}=10V$)	66A						
$R_{DS(ON)}$ (at $V_{GS}=10V$)	< 12.5m Ω						



Top View

TO-220AB



Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	± 25	
T_J	Maximum Junction Temperature	175	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55 to 175	$^{\circ}C$
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}C$	A

Mounted on Large Heat Sink

I_{DM}	Pulsed Drain Current *	$T_C=25^{\circ}C$	250**	A
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	66	A
		$T_C=100^{\circ}C$	50	
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$	88	W
		$T_C=100^{\circ}C$	44	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.7	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	

Avalanche Ratings

E_{AS}	Avalanche Energy, Single Pulsed	$L=0.5mH$	200**	mJ
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Note : * Repetitive rating ; pulse width limited by junction temperature

** Drain current is limited by junction temperature

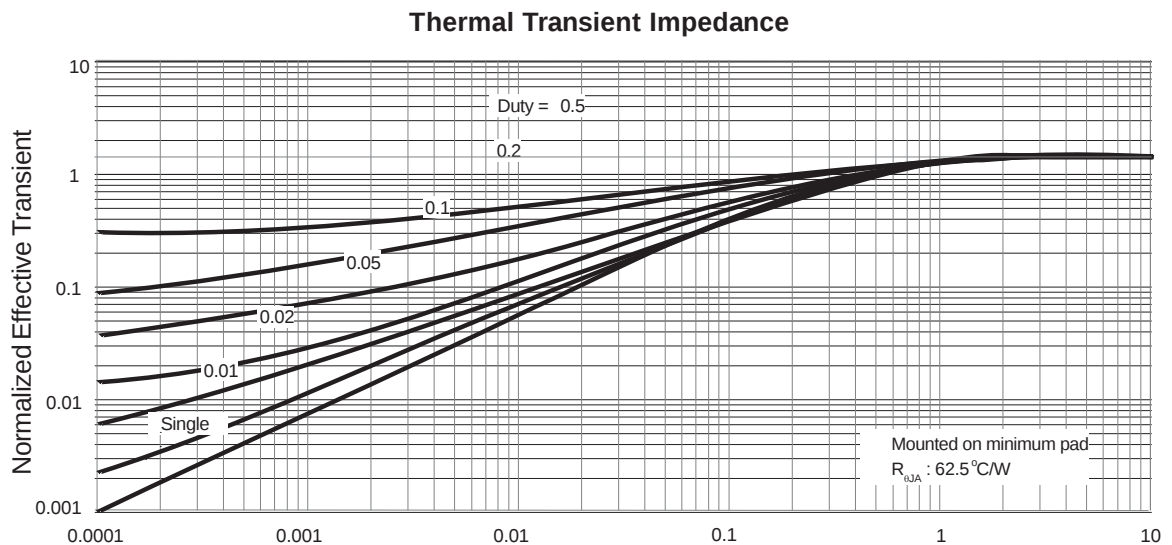
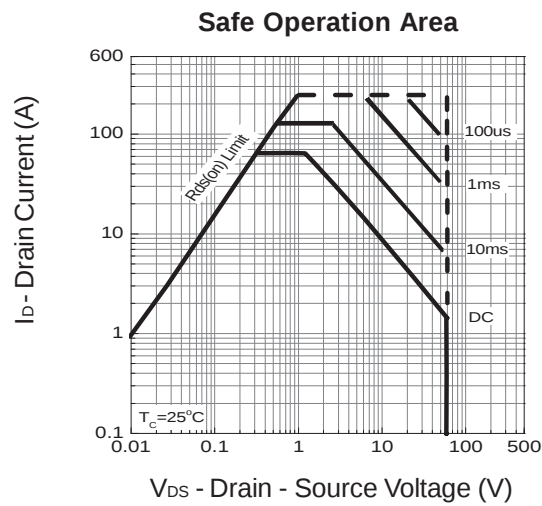
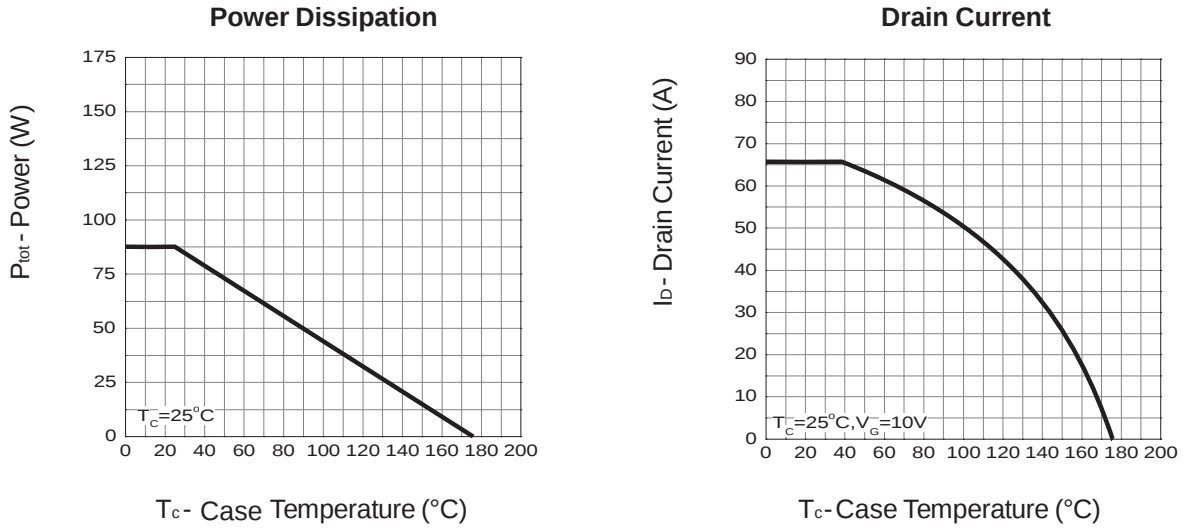
*** $V_D=48V$

Absolute Maximum Ratings $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	TMT1606P			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	10	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	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} =33A	-	10.4	12.5	mΩ
Diode Characteristics						
V _{SD} *	Diode Forward Voltage	I _{SD} =33A, V _{GS} =0V	-	0.8	1	V
t _{rr}	Reverse Recovery Time	I _{SD} =33A, dI _{SD} /dt=100A/μs	-	33	-	ns
Q _{rr}	Reverse Recovery Charge		-	61	-	nC
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.0	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1.0MHz	-	2068	-	pF
C _{oss}	Output Capacitance		-	764	-	
C _{rss}	Reverse Transfer Capacitance		-	376	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _G = 5 Ω, I _{DS} =33A, V _{GS} =10V,	-	14	-	ns
T _r	Turn-on Rise Time		-	13	-	
t _{d(OFF)}	Turn-off Delay Time		-	20	-	
T _f	Turn-off Fall Time		-	7.2	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =48V, V _{GS} =10V, I _{DS} =33A	-	51	-	nC
Q _{gs}	Gate-Source Charge		-	11	-	
Q _{gd}	Gate-Drain Charge		-	17	-	

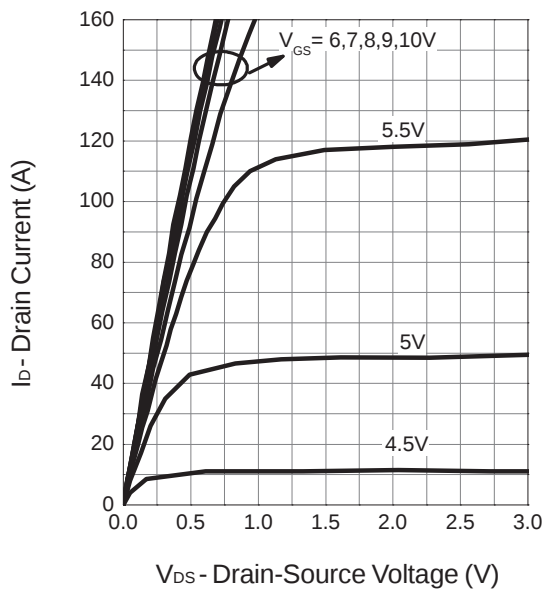
Note * : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Operating Characteristics

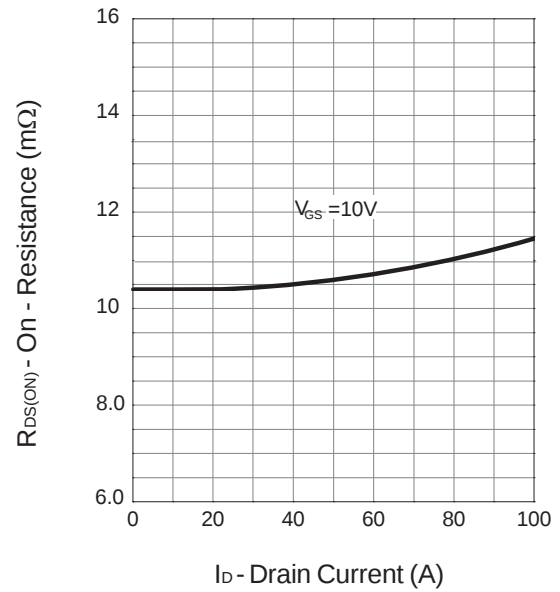


Typical Operating Characteristics (Cont.)

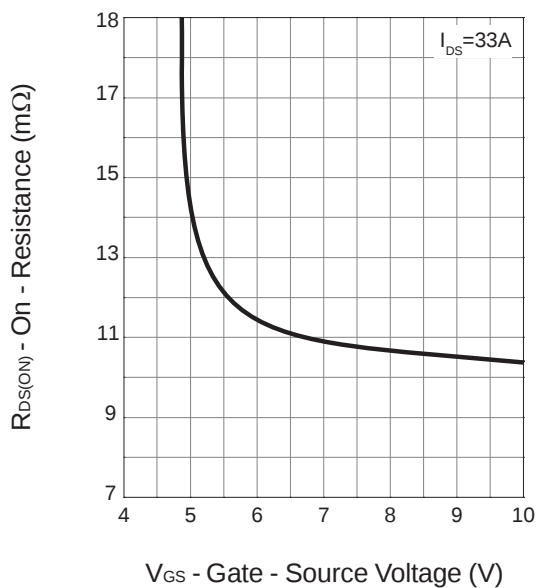
Output Characteristics



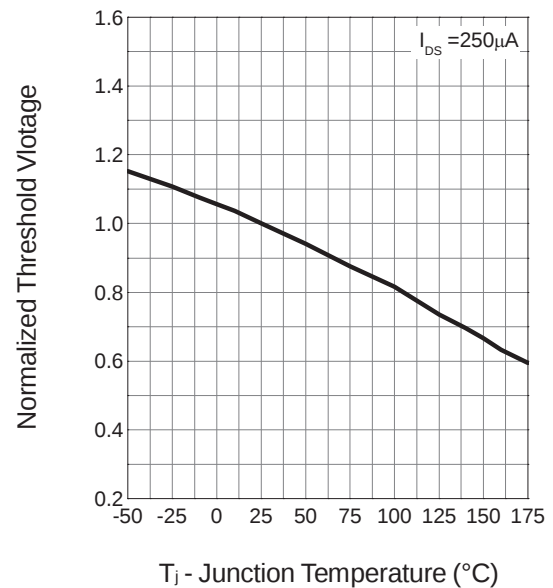
Drain-Source On Resistance



Drain-Source On Resistance

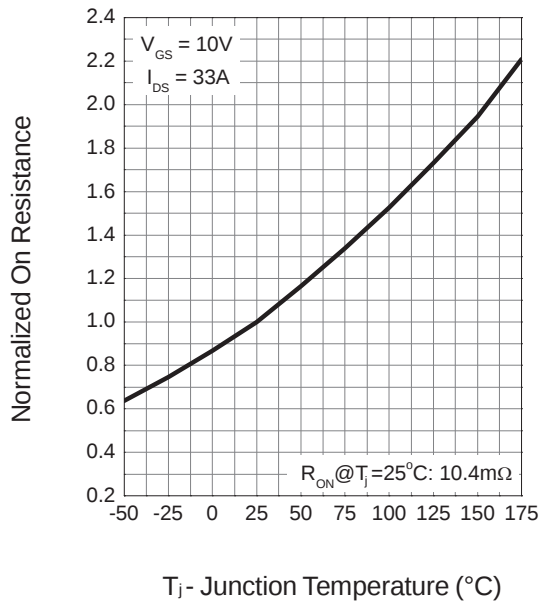


Gate Threshold Voltage

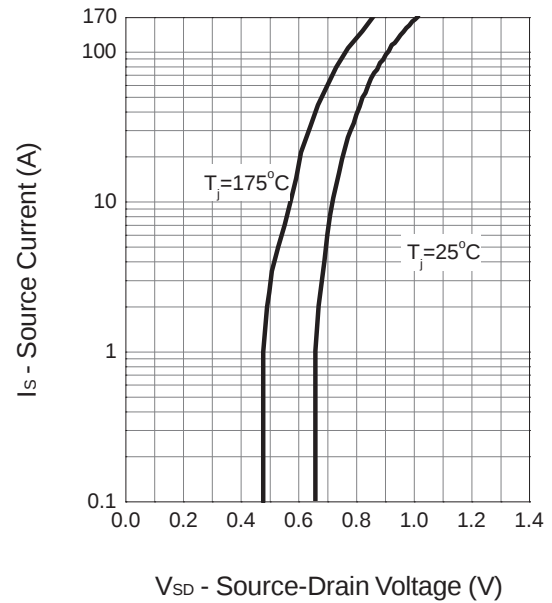


Typical Operating Characteristics (Cont.)

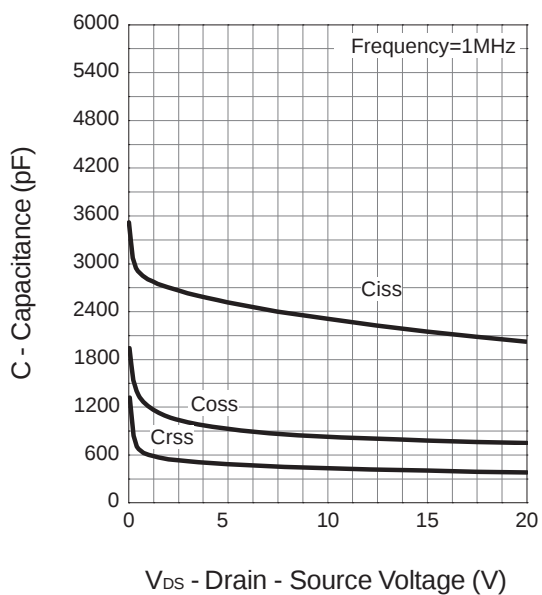
Drain-Source On Resistance



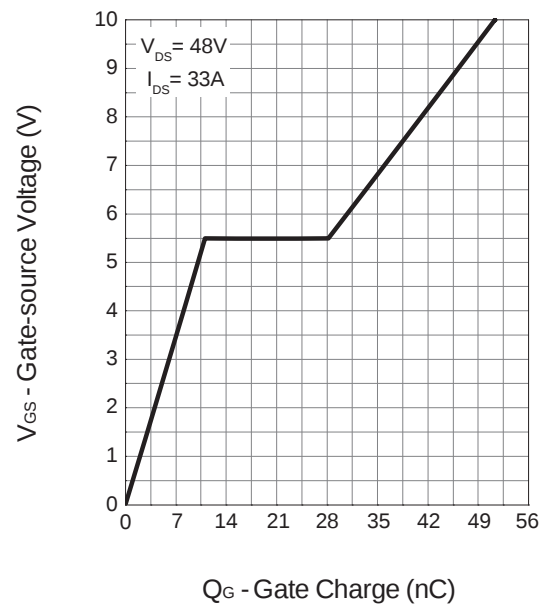
Source-Drain Diode Forward



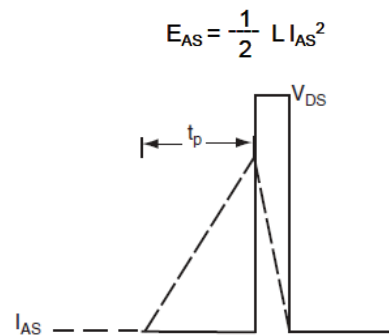
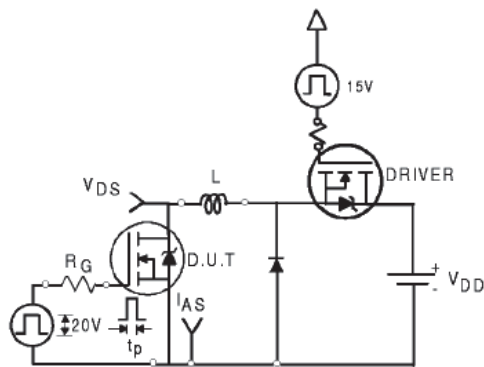
Capacitance



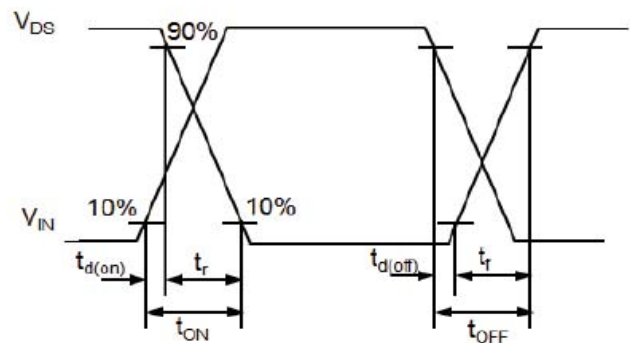
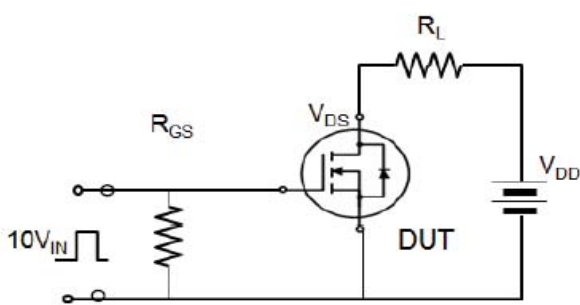
Gate Charge



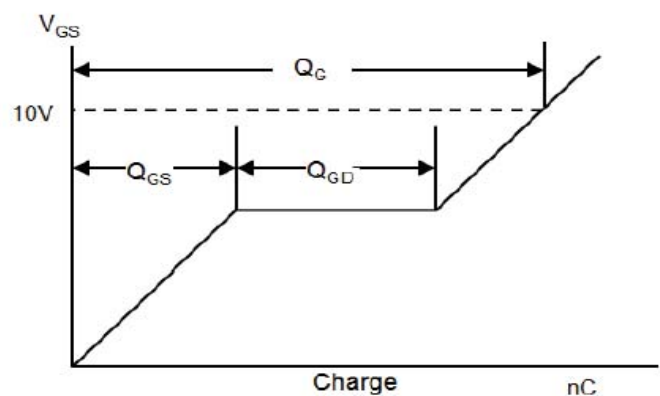
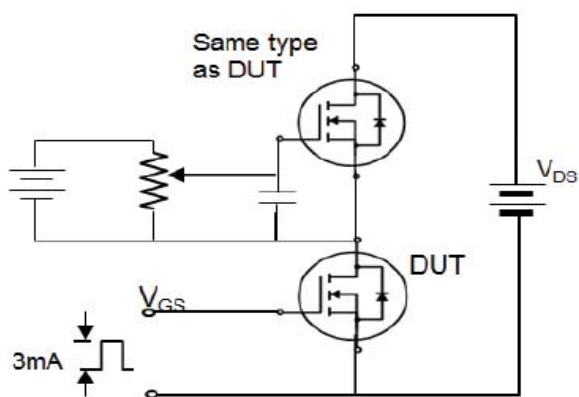
Avalanche Test Circuit



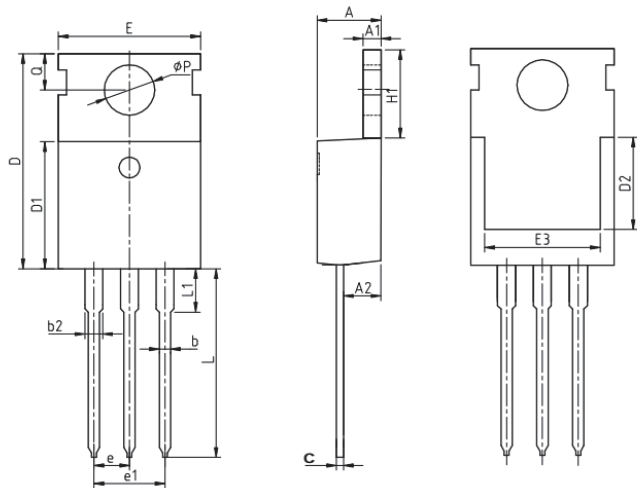
Switching Time Test Circuit



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