



TMT7080 / TMB7080 N-CHANNEL ENHANCEMENT MOSFET

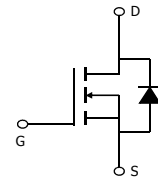
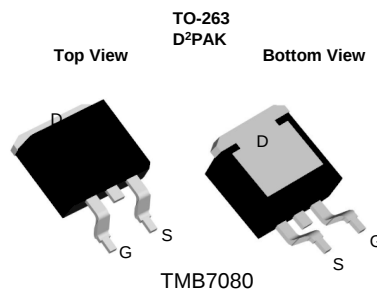
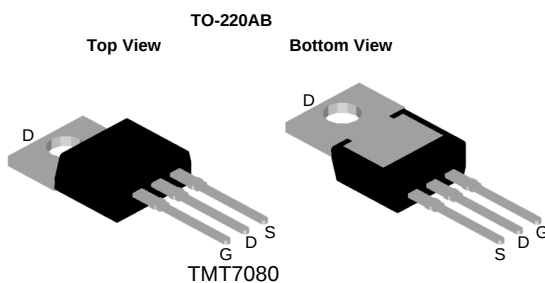
General Description

The TMT7080 & TMB7080 uses Trench MOSFET technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of $R_{DS(ON)}$, C_{iss} and C_{oss} . This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

Product Summary

V_{DS}	70V
I_D (at $V_{GS}=10V$)	80A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	< 7.2m Ω

100% UIS Tested
100% R_g Tested



ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$, unless otherwise noted

Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	70	V
V_{GSS}	Gate-Source Voltage	+25	V
I_D	Continuous Drain Current($T_J=150^\circ\text{C}$)	80	A
I_{DM}	Pulsed Drain Current	320	A
T_J	Operation Junction Temperature	-55~150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55~150	$^\circ\text{C}$
P_D	Power Dissipation($T_C=25^\circ\text{C}$)	100	W
E_{AS}	Single Pulse Avalanche Energy ($T_J=25^\circ\text{C}$, $V_{DD}=40V$, $V_{GS}=10V$, $R_G=25\Omega$)	410	mJ
$R_{\theta JC}$	Thermal Resistance-Junction to Ambient	1.25	$^\circ\text{C/W}$

Note: Absolute maximum ratings are those values beyoud which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	70	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{CS} , I _{DS} =250μA	2	-	4	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} = <u>±</u> 20V	-	-	<u>±</u> 100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =68V, V _{GS} =0V T _C =25 °C	-	-	1	μA
		V _{DS} =68V, V _{GS} =0V T _C =125 °C	-	-	10	μA
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} = 10V, I _{DS} =40A	-	5.9	7.2	mΩ
Source-Drain Diode						
I _S	Diode Forward Current (Max.)		-	92	-	A
V _{SD}	Diode Forward Voltage	I _S =40A,V _{GS} =0V		0.69	0.95	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V I _D =40A	-	82	-	nC
Q _{gs}	Gate-Source Charge		-	16.2	-	
Q _{gd}	Gate-Drain Charge		-	36.7	-	
C _{iSS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V F=1MHz	-	3483	-	pF
C _{oss}	Output Capacitance		-	459	-	
C _{rSS}	Reverse Transfer Capacitance		-	214	-	
t _{d(on)}	Turn-On Time	V _{DS} =30V, R _L =15Ω V _{GS} =10V, R _G =2.5Ω I _D =2A	-	11	-	nS
t _r			-	13	-	
t _{d(off)}	Turn-Off Time		-	22	-	
t _f			-	37	-	

Note: 1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$;

2. Static parameters are based on package level with recommended wire-bonding

Figure1. Safe Operating Area

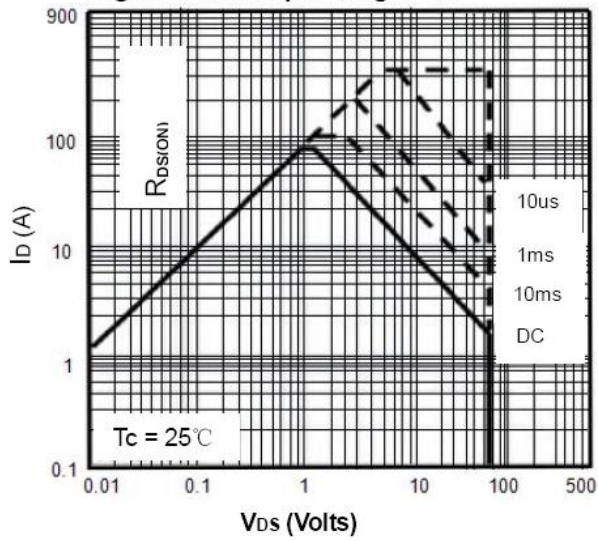


Figure2. Source-Drain Diode Forward Voltage

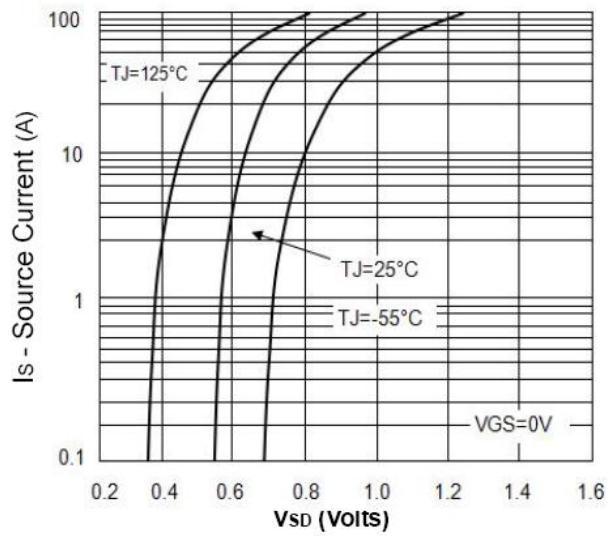


Figure3. Output Characteristics

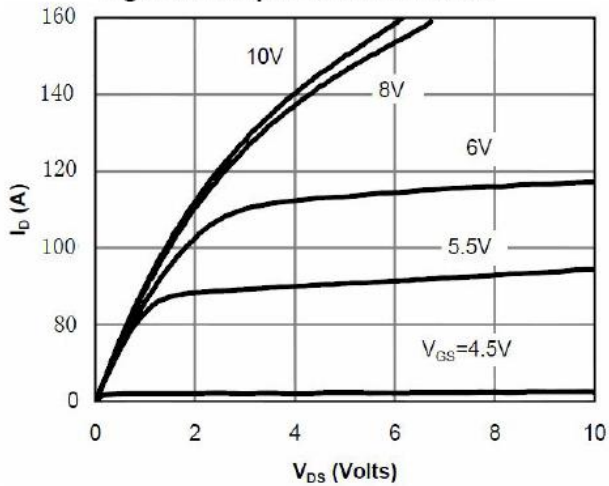


Figure4. Transfer Characteristics

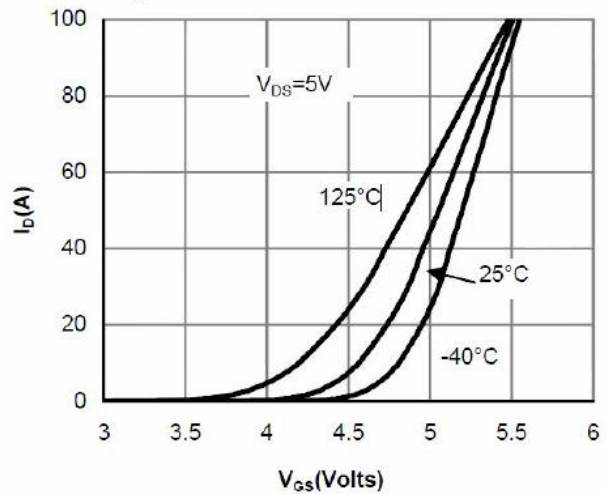


Figure5. Static Drain-Source On Resistance

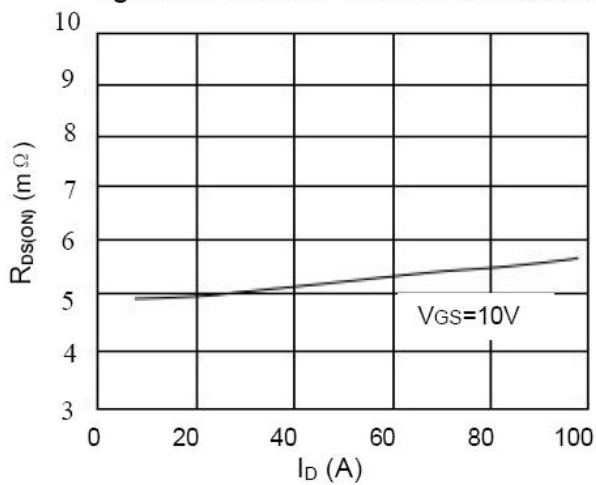


Figure6. $R_{DS(ON)}$ vs Junction Temperature

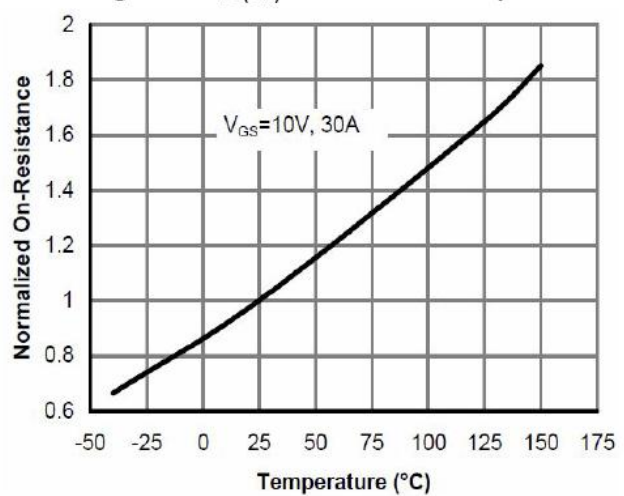


Figure7. BV_{DSS} vs Junction Temperature

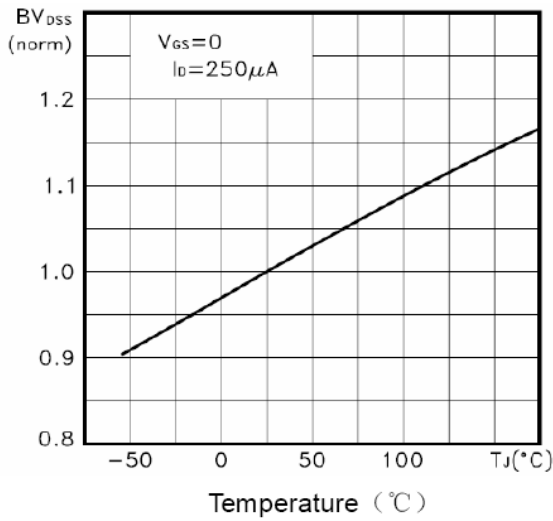


Figure8. $V_{GS(th)}$ vs Junction Temperature

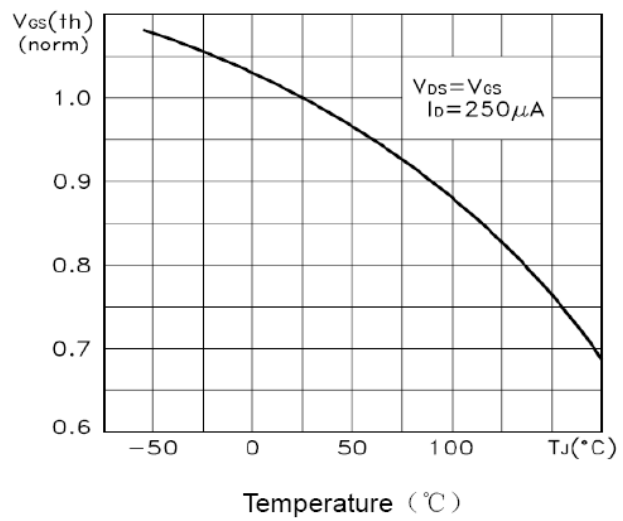


Figure9. Gate Charge Waveforms

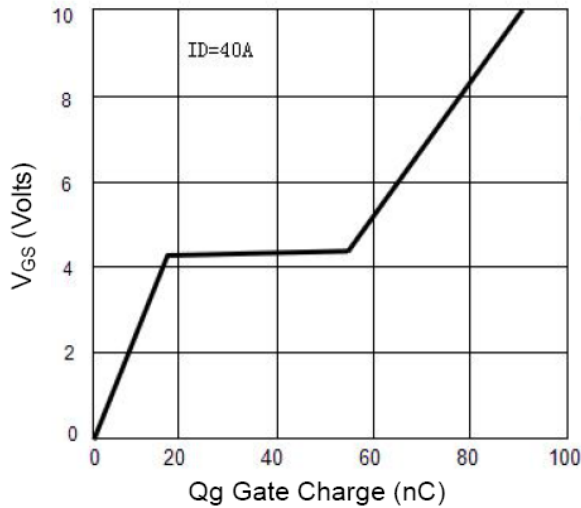


Figure10. Capacitance

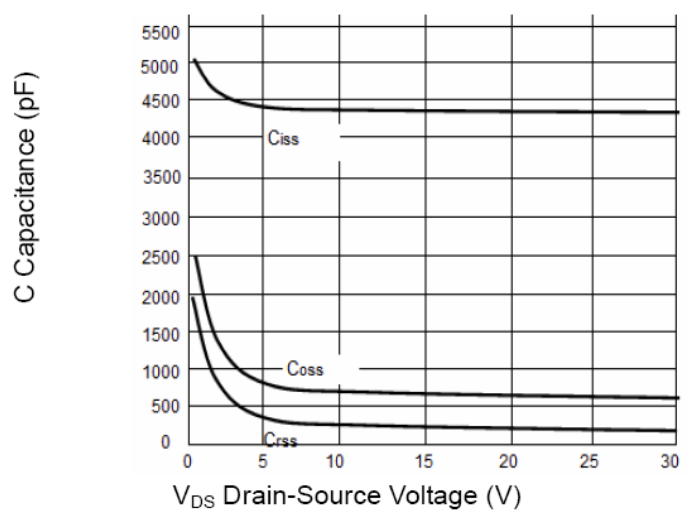
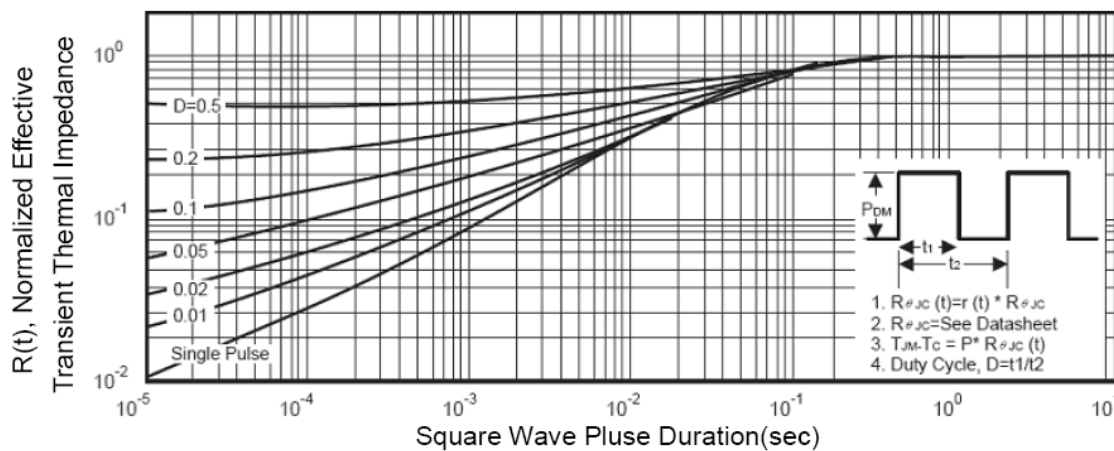
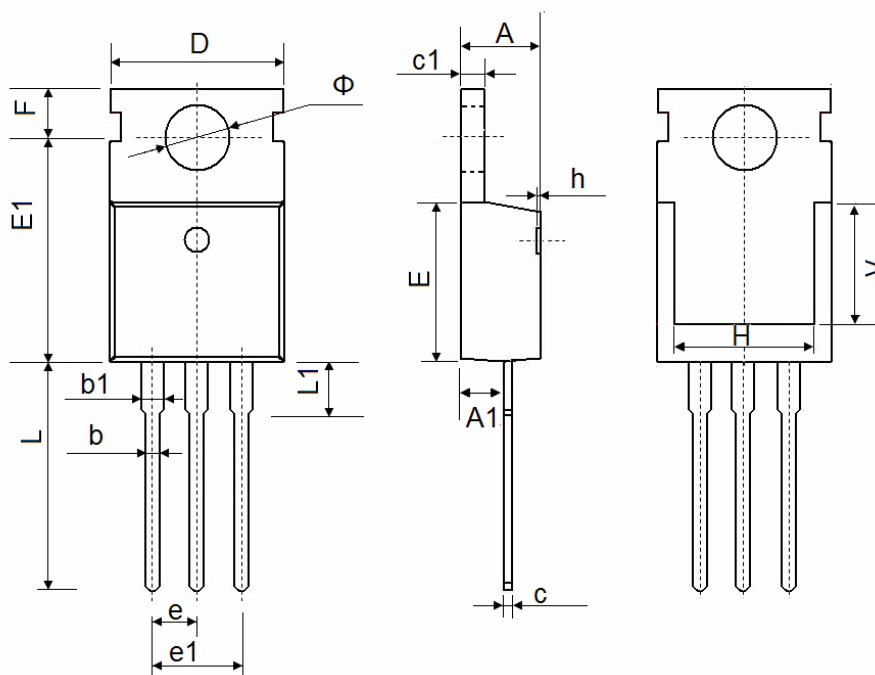


Figure11. Normalized Maximum Transient Thermal Impedance

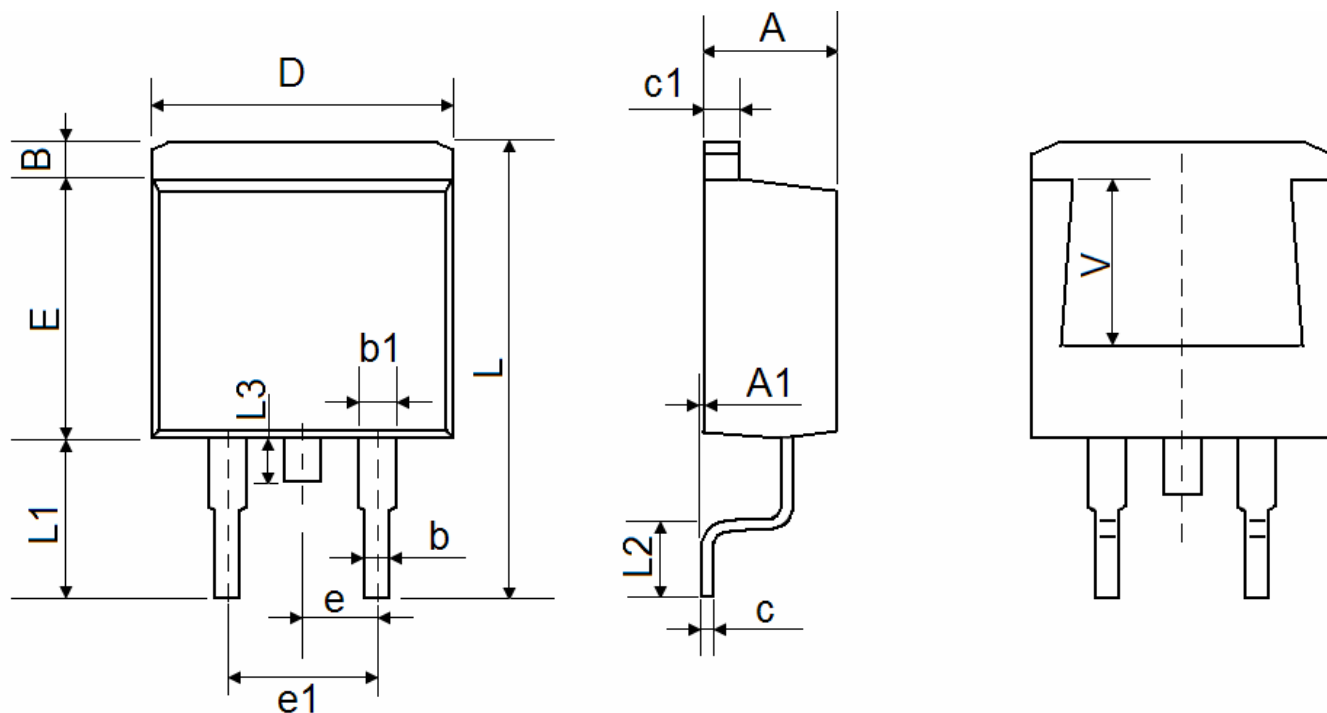


TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.9500	9.750	0.352	0.384
E1	12.650	12.950	0.498	0.510
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	7.500 REF.		0.295 REF.	
Φ	3.400	3.800	0.134	0.150

TO-263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
V	5.600 REF		0.220 REF	