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TPM100160NHW3

N-Channel Power MOSFET

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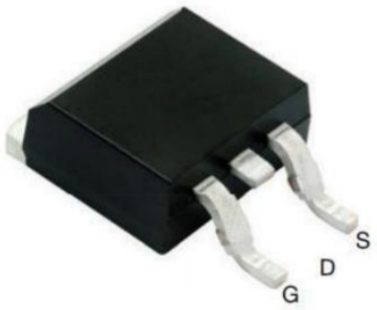
Product Summary

- V_{DS} 100 V
- I_{DS} 160 A
- $R_{DS(ON)}$ (at V_{GS}= 10V) <3.0mΩ(Typ)

Application

- Motor control and drives
- Load switch
- Power management
- PWM Application

Package and Pin Configuration



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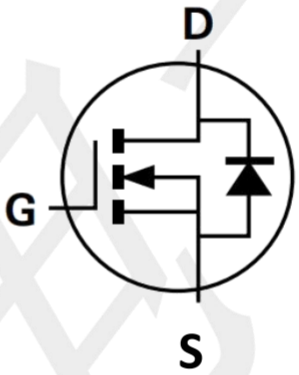
Circuit diagram



Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	160	A
Pulsed Drain Current (note1)	I_{DM}	620	A
Maximum Power Dissipation	P_D	180	W
Operating Junction Temperature Range	T_J	-55 to +150	℃
Storage Temperature Range	T_{stg}	-55 to +150	℃

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Thermal resistance, junction – case. Max	PCB Mount (note2)	R_{thJC}	0.75	°C/W

notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2 . When mounted on 2" square PCB (FR4 material).

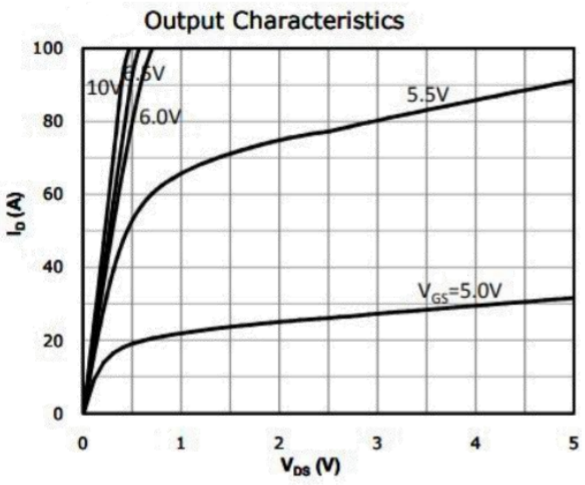
Electrical Characteristics (T_A=25℃unless otherwise noted)

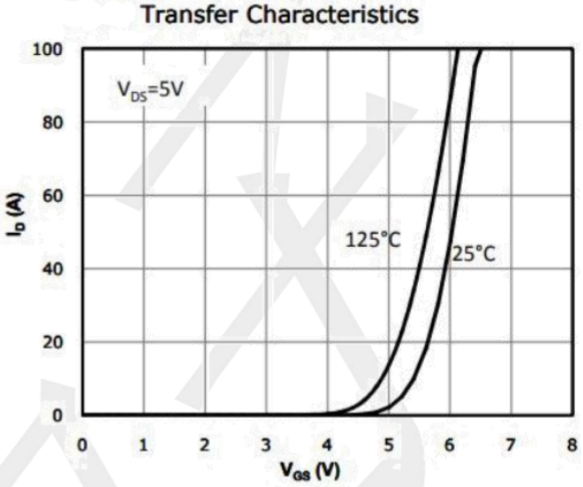
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= 250μA	BV_{DSS}	100	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS} , I_D= 250μA	$V_{GS(th)}$	2.0	3.0	4.0	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 80V, V_{GS}=0V	I_{DSS}	--	0.1	1	μA
	V_{DS}= 80V, T_J=125°C		--	10	50	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= 10V, I_D= 20A	R_{DS}(on)	--	3.0	3.75	mΩ
Forward Transconductance (Note 2)	V_{DS}= 5V, I_D= 50A	g_{fs}	--	100	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = 50V, I_D = 50A, V_{GS} = 10V	Q_g	--	130	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	30	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	40	--	
Input Capacitance	V_{DS} = 50V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	6100	--	pF
Output Capacitance		C_{oss}	--	2900	--	
Reverse Transfer Capacitance		C_{rss}	--	340	--	
Switching						
Turn-On Delay Time (Note 3)	V_{Ds} = 50V, I_D= 50A, V_{GS} = 10V, R_G = 3Ω	$t_{d(on)}$	--	50	--	nS
Rise Time (Note 3)		t_r	--	60	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	80	--	
Fall Time (Note 3)		t_f	--	40	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_{SD} = 50A	V_{SD}	--	0.9	1.5	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	160	A
Pulsed Current (Note 1)		I_{SM}	--	--	620	A

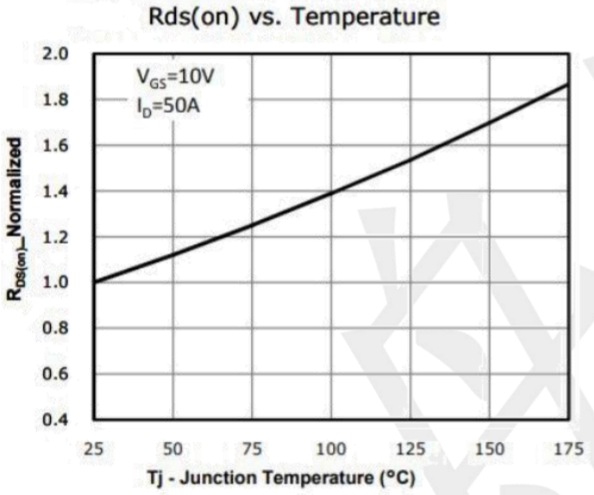
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)







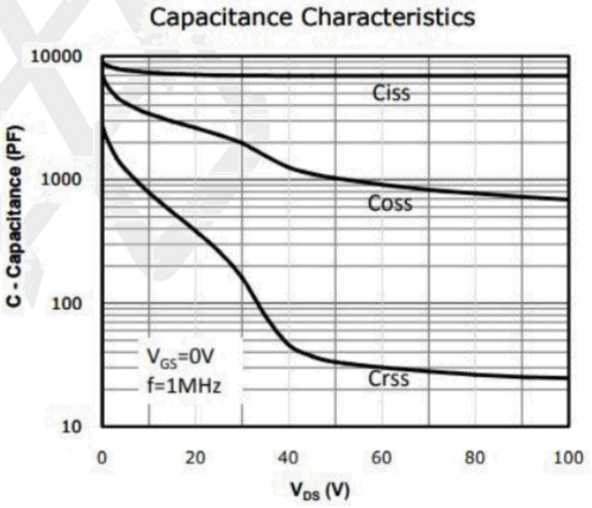


Fig 9: Power Dissipation

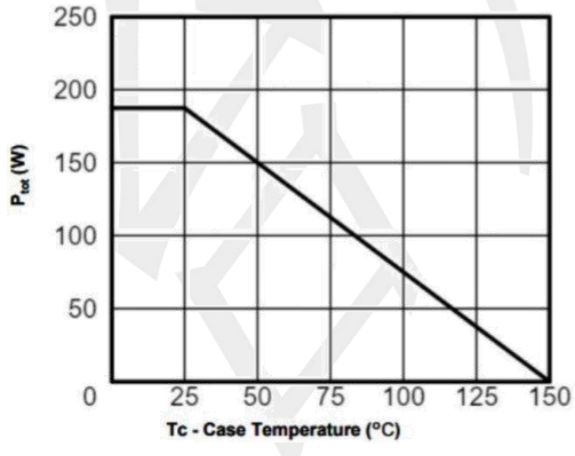
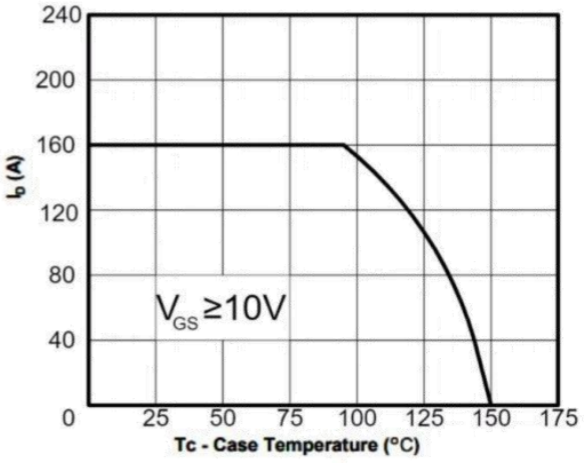


Fig 10: Drain Current Derating



Package Outline Dimensions (unit: mm)

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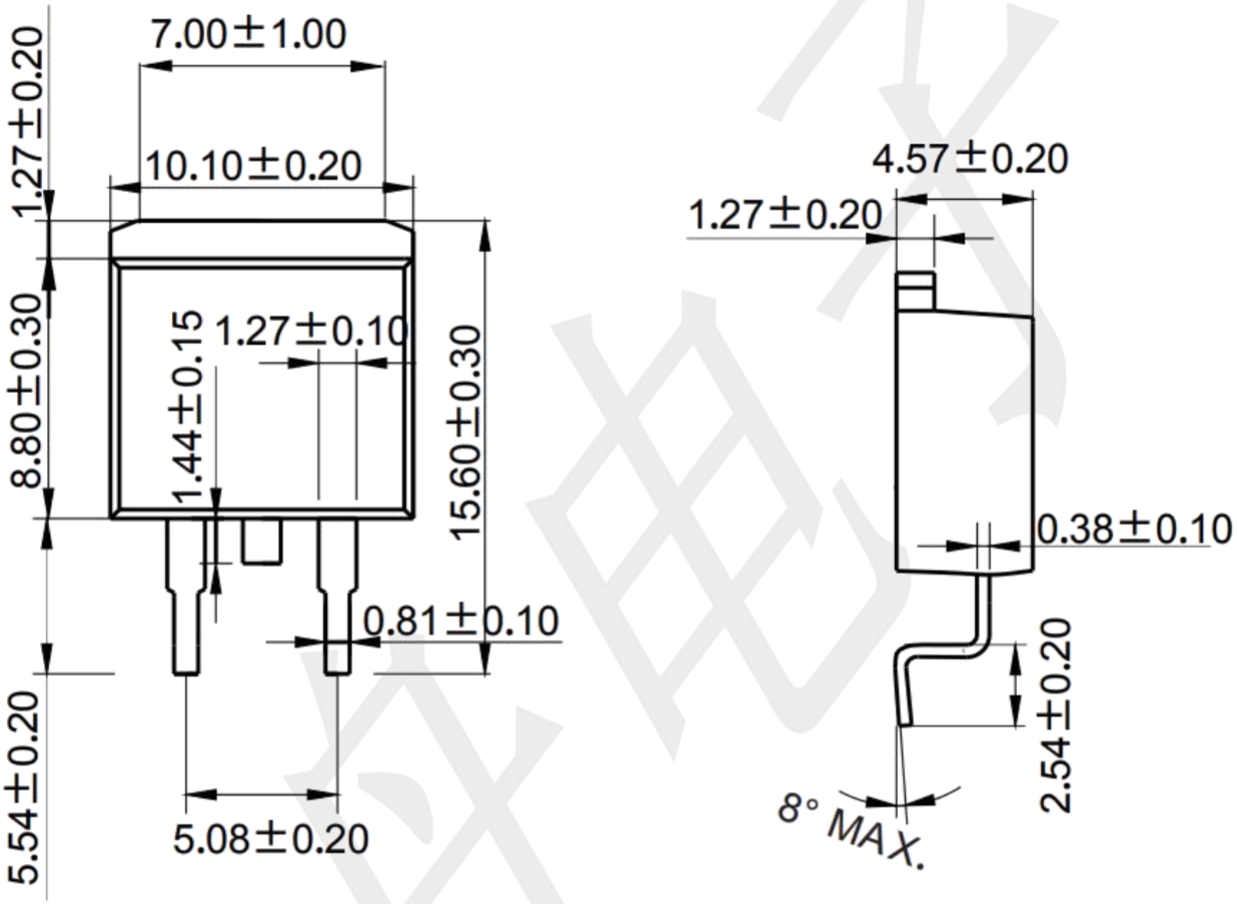

Mounting Pad Layout (unit: mm)