

Features

- $V_{ds} = 60V, I_D = 53A$
- $R_{ds(ON)} \leq 12m\Omega @ V_{GS} = 10V$
- $R_{ds(ON)} \leq 17m\Omega @ V_{GS} = 4.5V$

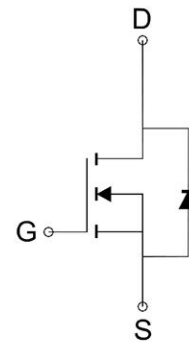
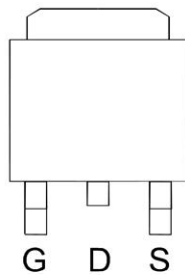
Application

- Load Switch
- PWM Application
- Power management

Package and Pin Configuration

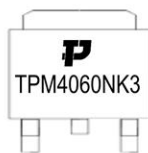
(TO-252-3L)

Top View



N-Channel MOSFET

Marking:



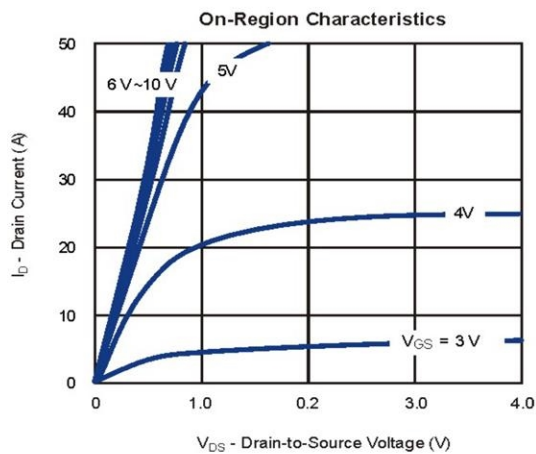
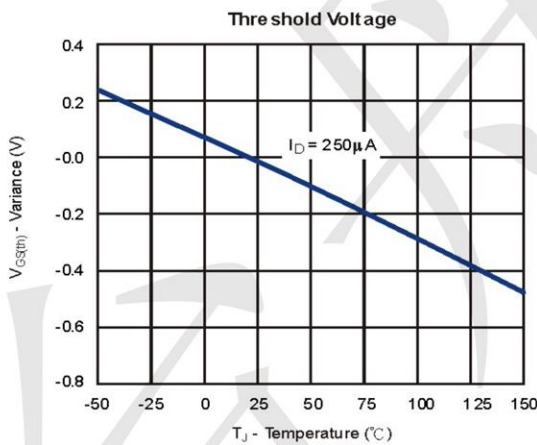
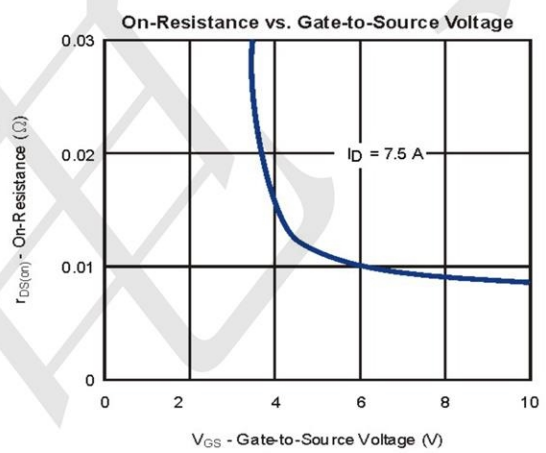
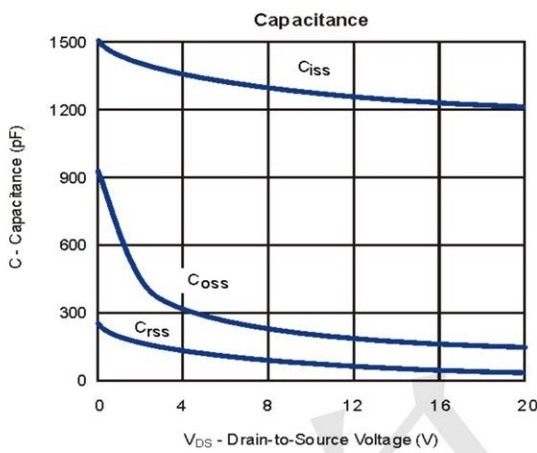
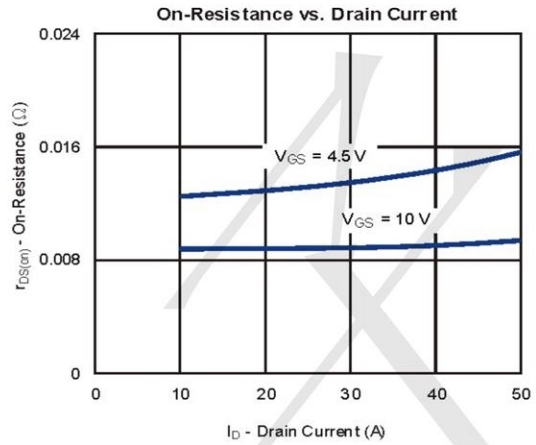
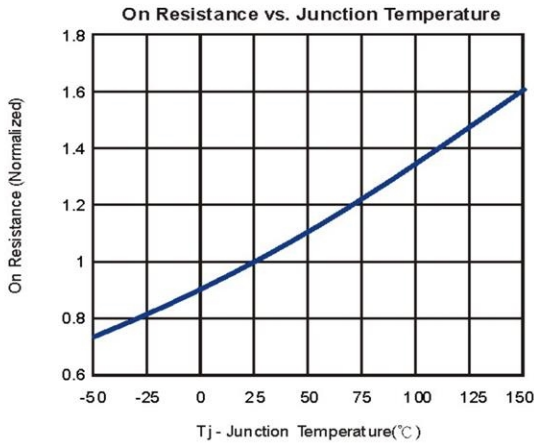
Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

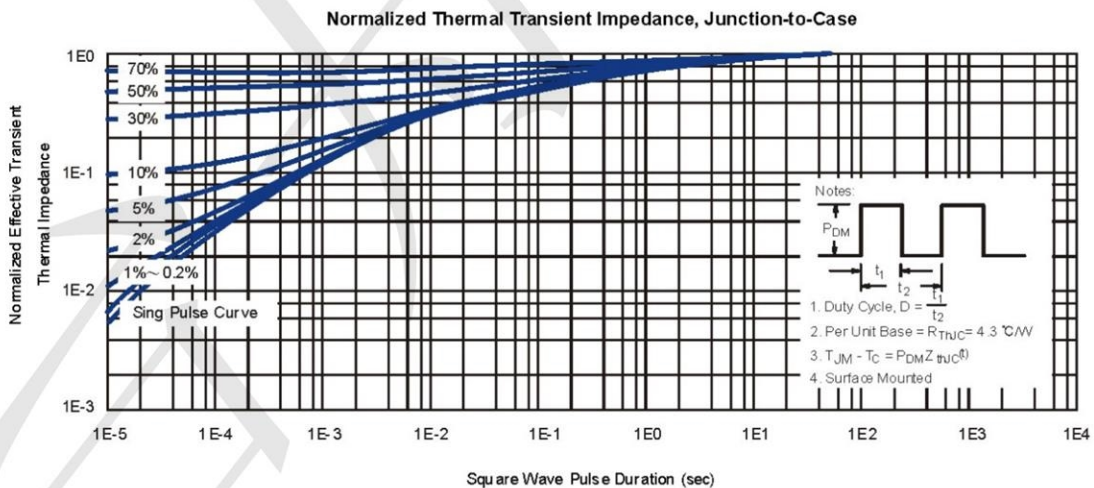
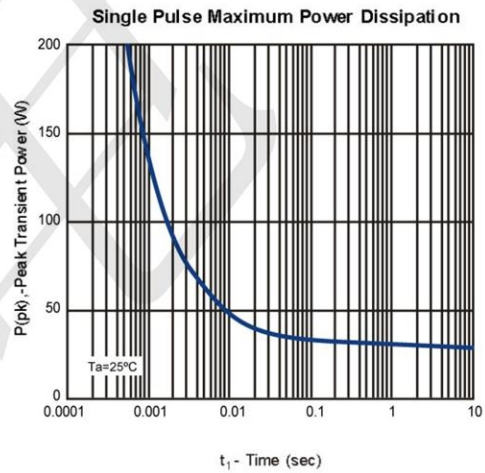
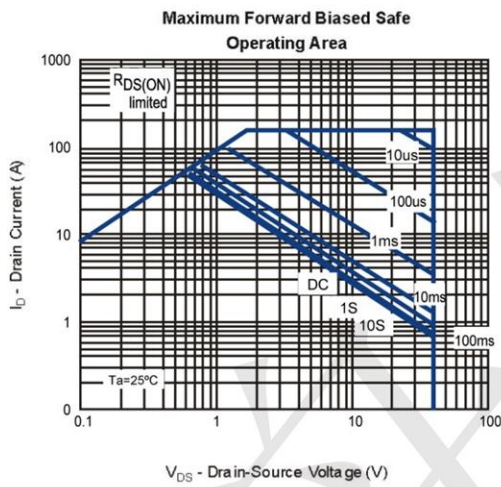
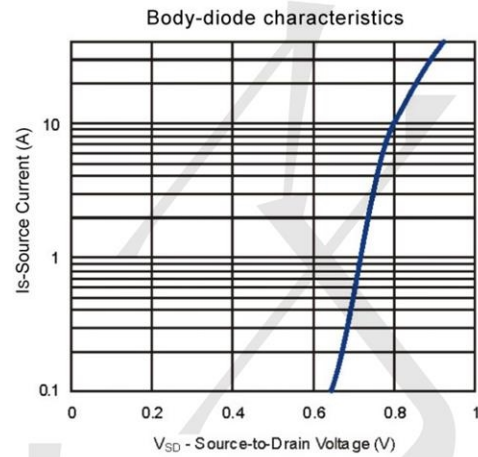
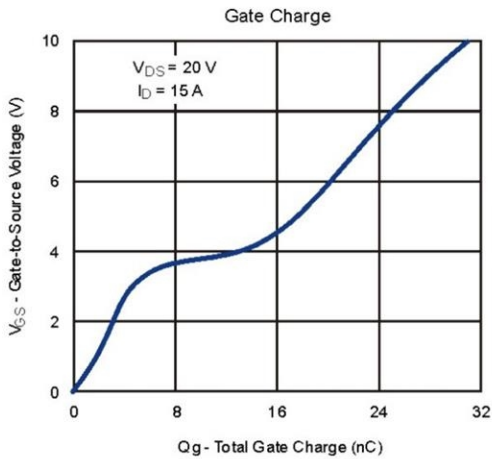
Parameter	Symbol	Steady	Unit
Drain-Source Voltage	V_{DSS}	40	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($T_J = 150^\circ C$, limited by package)	I_D	$T_C = 25^\circ C$	53
		$T_C = 70^\circ C$	31
Pulsed Drain Current	I_{DM}	156	A
Maximum Power Dissipation (Note A)	P_D	$T_C = 25^\circ C$	30
		$T_C = 70^\circ C$	18.5
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient(Note A)	$R_{\theta JA}$	42	$^\circ C/W$
Thermal Resistance-Junction to Case(Note A)	$R_{\theta JC}$	4.3	$^\circ C/W$

Electrical Characteristics (TA=25°C Unless Otherwise Specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
STATIC						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μA	40			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250 μA	1	1.5	3	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	μA
R _{DS(ON)}	Drain-Source On-State Resistance ^a	V _{GS} =10V, I _D = 15A		8.8	12	mΩ
		V _{GS} =4.5V, I _D = 13A		12	17	
V _{SD}	Diode Forward Voltage	I _S =15A, V _{GS} =0V		0.8	1.2	V
DYNAMIC						
Q _g (TOT)	Total Gate Charge, V _{GS} =10V	V _{DS} =20V, I _D =15A		31	36	nC
Q _g	Total Gate Charge, V _{GS} =4.5V			16	18	
Q _{gs}	Gate-Source Charge			6.5		
Q _{gd}	Gate-Drain Charge			8.3		
R _g	Gate Resistance	V _{GS} =V _{DS} =0V, f=1MHz		1.6		Ω
C _{iss}	Input capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz		1240	1500	pF
C _{oss}	Output Capacitance			170		
C _{rss}	Reverse Transfer Capacitance			60		
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V, I _D =1A V _{GS} =10V, R _{GEN} =6Ω		16	20	ns
t _r	Turn-On Rise Time			13	17	
t _{d(off)}	Turn-Off Delay Time			60	75	
t _f	Turn-On Fall Time			7	10	

Typical Electrical and Thermal Characteristic Curves







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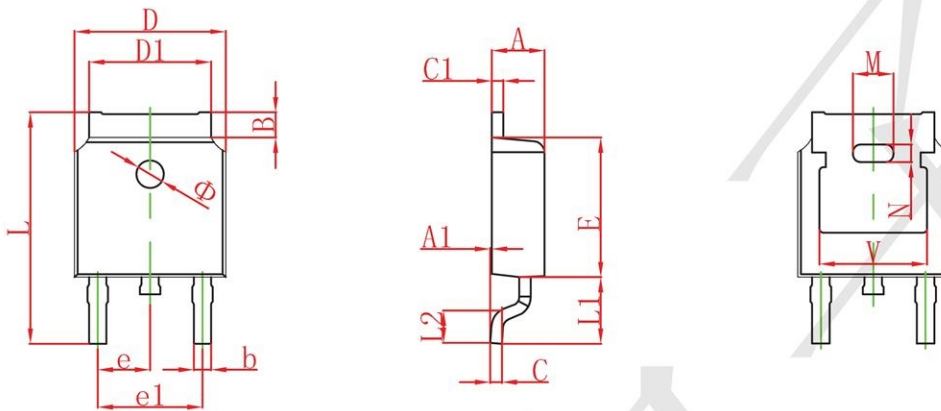
—台丹电子—

IPD50N04S4-08

40V N-Channel MOSFET

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TO252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286 TYP.		0.090 TYP.	
e1	4.327	4.727	0.170	0.186
M	1.778 REF.		0.070 REF.	
N	0.762 REF.		0.018 REF.	
L	9.800	10.400	0.386	0.409
L1	2.9 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
V	4.830 REF.		0.190 REF.	
Φ	1.100	1.300	0.043	0.051

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