

**Features**

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

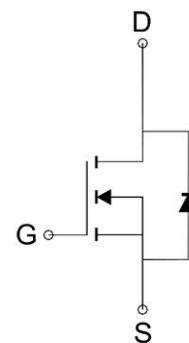
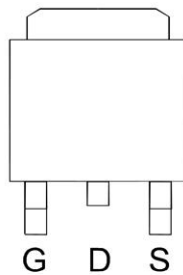
**Application**

- Load Switch
- PWM Application
- Power management

**Package and Pin Configuration**

(TO-252-3L)

Top View



N-Channel MOSFET

**Marking:**



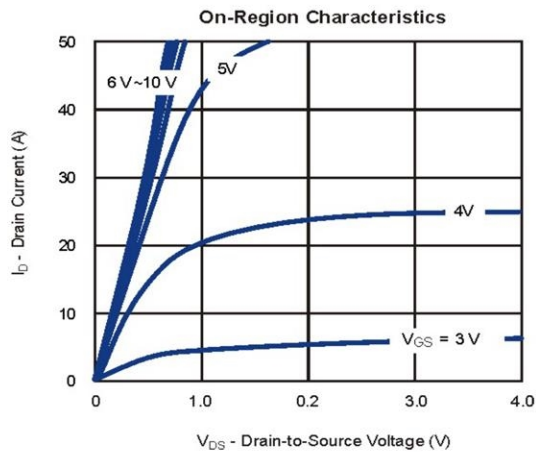
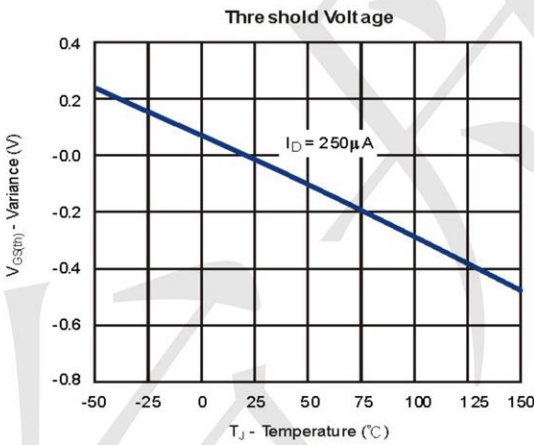
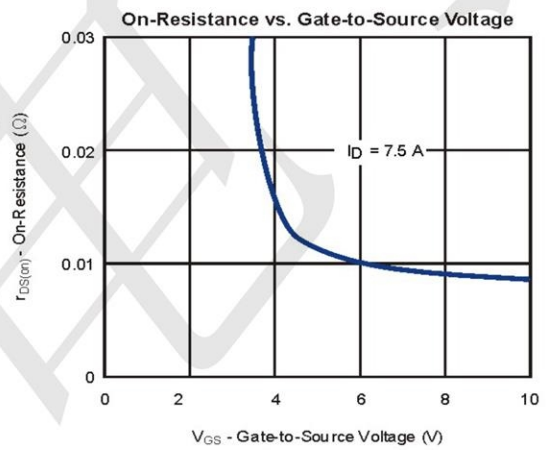
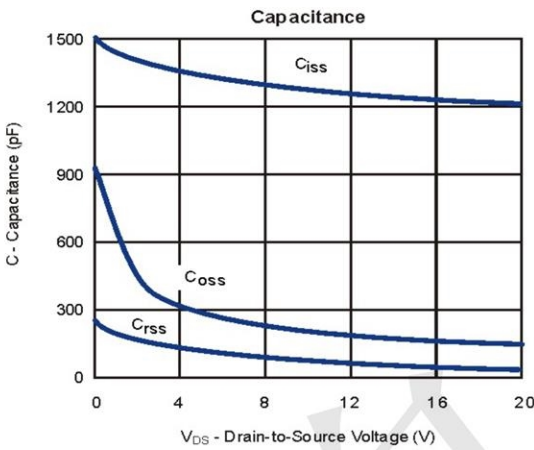
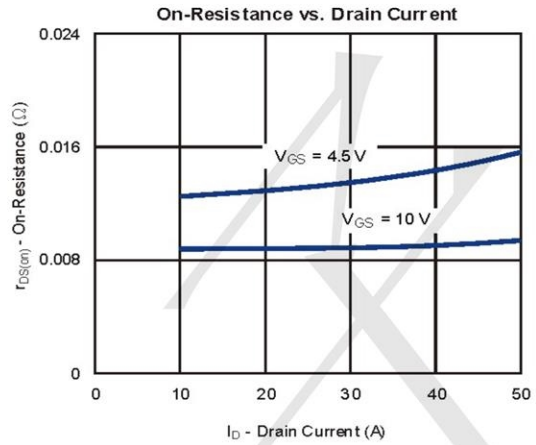
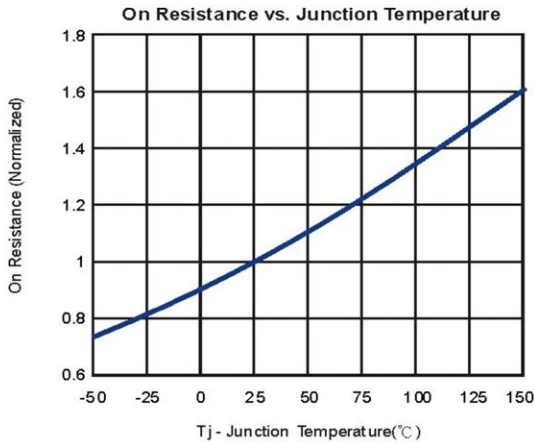
**Absolute Maximum Ratings** ( $T_A = 25^\circ C$  Unless Otherwise Noted)

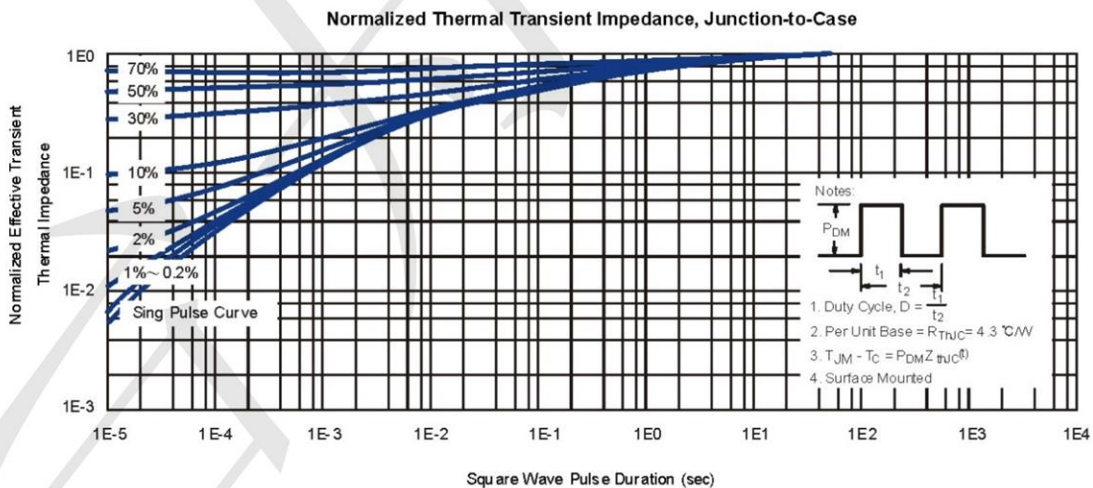
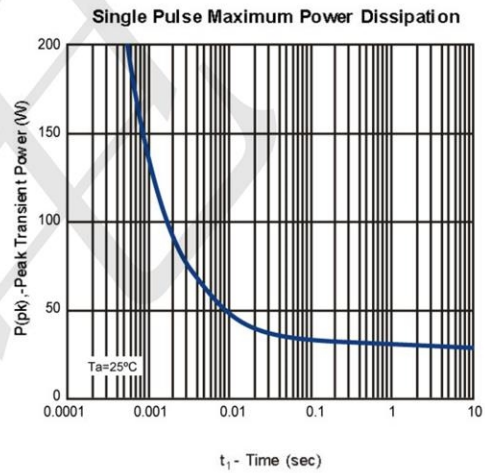
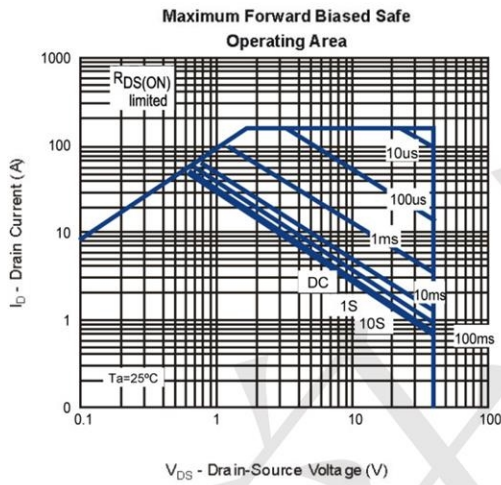
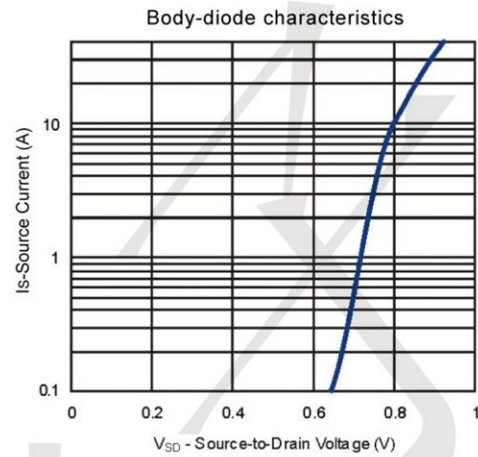
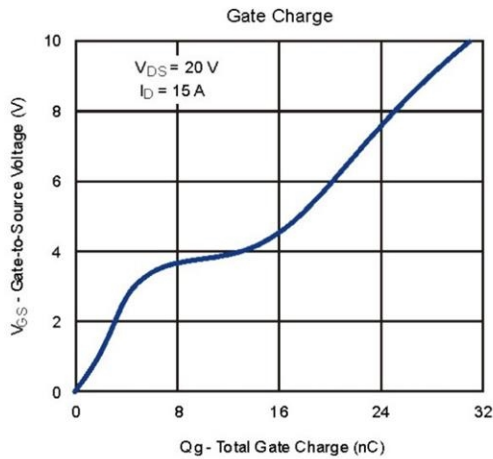
Parameter	Symbol	Steady	Unit
Drain-Source Voltage	$V_{DSS}$	40	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current ( $T_J = 150^\circ C$ , limited by package)	$I_D$	$T_C = 25^\circ C$	53
		$T_C = 70^\circ C$	31
Pulsed Drain Current	$I_{DM}$	156	A
Maximum Power Dissipation (Note A)	$P_D$	$T_C = 25^\circ C$	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
<b>STATIC</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	40			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	1	1.5	3	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V			1	μA
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance <sup>a</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> = 15A		8.8	12	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> = 13A		12	17	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =15A, V <sub>GS</sub> =0V		0.8	1.2	V
<b>DYNAMIC</b>						
Q <sub>g</sub> (TOT)	Total Gate Charge, V <sub>GS</sub> =10V	V <sub>DS</sub> =20V, I <sub>D</sub> =15A		31	36	nC
Q <sub>g</sub>	Total Gate Charge, V <sub>GS</sub> =4.5V			16	18	
Q <sub>gs</sub>	Gate-Source Charge			6.5		
Q <sub>gd</sub>	Gate-Drain Charge			8.3		
R <sub>g</sub>	Gate Resistance	V <sub>GS</sub> =V <sub>DS</sub> =0V, f=1MHz		1.6		Ω
C <sub>iss</sub>	Input capacitance	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz		1240	1500	pF
C <sub>oss</sub>	Output Capacitance			170		
C <sub>rss</sub>	Reverse Transfer Capacitance			60		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =20V, I <sub>D</sub> =1A V <sub>GS</sub> =10V, R <sub>GEN</sub> =6Ω		16	20	ns
t <sub>r</sub>	Turn-On Rise Time			13	17	
t <sub>d(off)</sub>	Turn-Off Delay Time			60	75	
t <sub>f</sub>	Turn-Off Fall Time			7	10	

**Typical Electrical and Thermal Characteristic Curves**







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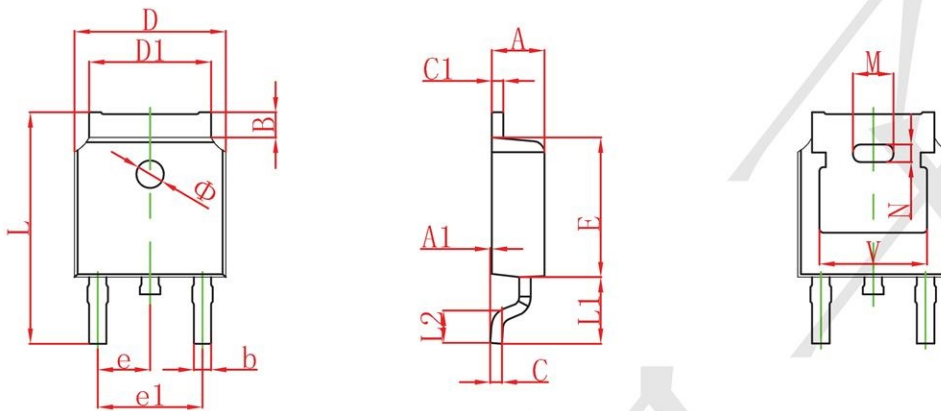
—台丹电子—

TPM4060NK3-1

40V N-Channel MOSFET

www.sot23.com.tw

T0252 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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