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TPM3060NK3

N-Channel Enhancement Mode MOSFET

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Features

- $R_{DS(ON)} \leqq 8.5m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leqq 13m\Omega @ V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

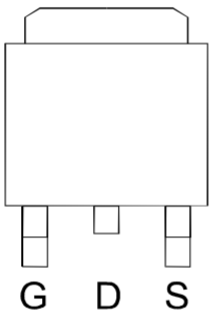
Application

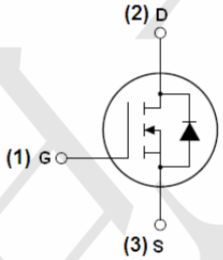
- Power Management
- DC/DC Converter
- LCD TV & Monitor Display inverter
- CCFL inverter
- Secondary Synchronous Rectification

Package and Pin Configuration

(TO-252-3L)

Top View





Marking:60N03

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

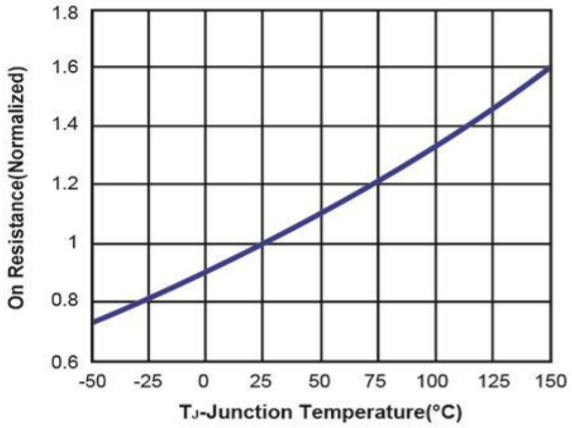
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	Tc=25℃	I_D	48.5	A
	Tc=70℃			
Pulsed Drain Current		I_{DM}	60.6	A
Maximum Power Dissipation	Tc=25℃	P_D	50	W
	Tc=70℃		32	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	℃
Thermal Resistance-Junction to Case		$R_{\theta JC}$	2.5	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

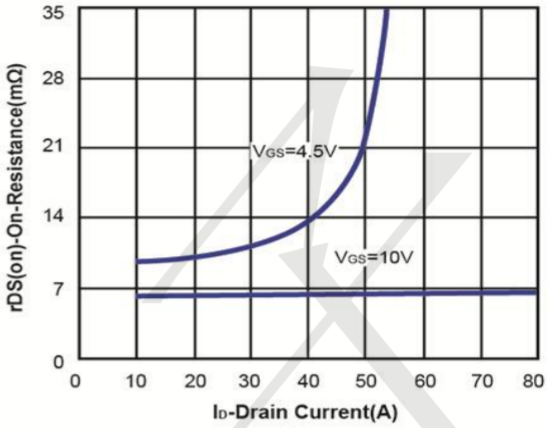
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	1.6	3	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=30A		6.5	8.5	mΩ
		V_{GS}=4.5V, I_D=20A		10	13	
V_{SD}	Diode Forward Voltage	I_S=20A, V_{GS}=0V		0.87	1.5	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=35A		22		nC
Qgs	Gate-Source Charge			4.5		
Qgd	Gate-Drain Charge			4		
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V,f=1MHz		1219		pF
Coss	Output Capacitance			182		
Crss	Reverse Transfer Capacitance			88		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=15V,V_{GS} =10V R_G=24Ω,R_L=15Ω, I_D=1A		13		ns
t_r	Turn-On Rise Time			10		
$t_{d(off)}$	Turn-Off Delay Time			46		
t_f	Turn-Off Fall Time			7		

Typical Characteristics

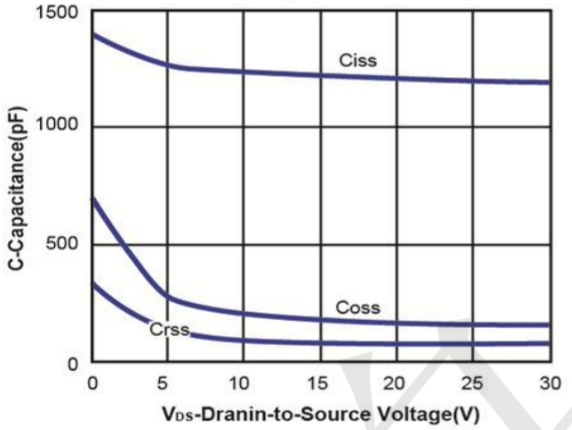
On Resistance vs. Junction Temperature



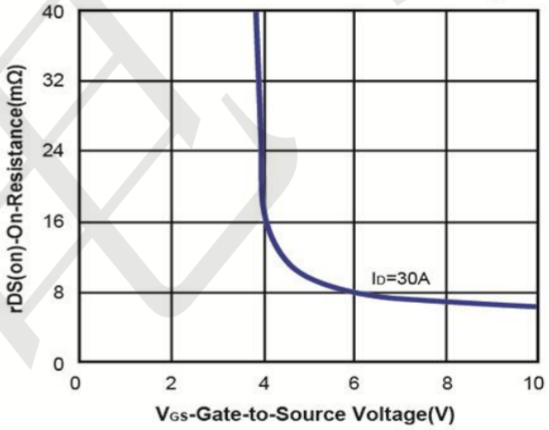
On Resistance vs. Drain Current



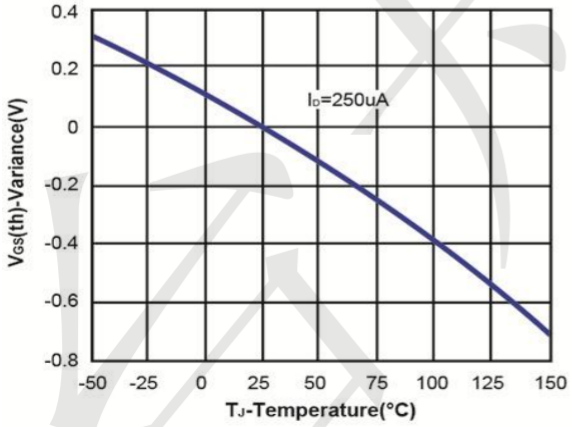
Capacitance



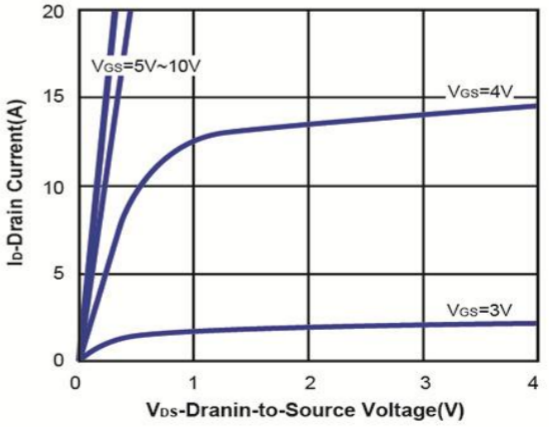
On Resistance vs. Gate-to-Source Voltage



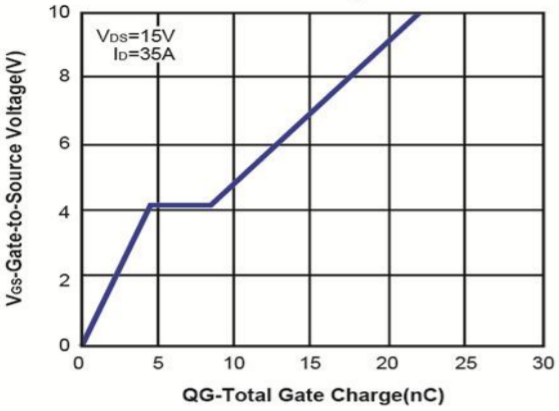
Threshold Voltage



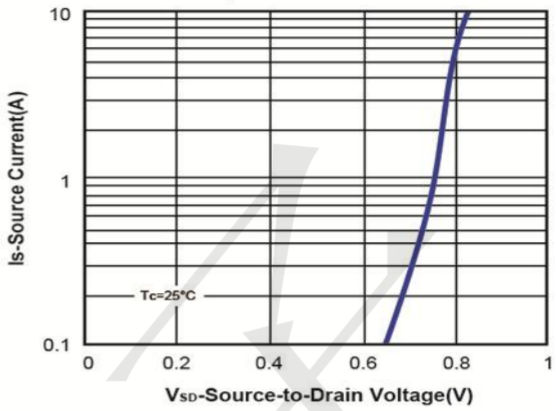
On-Region Characteristics



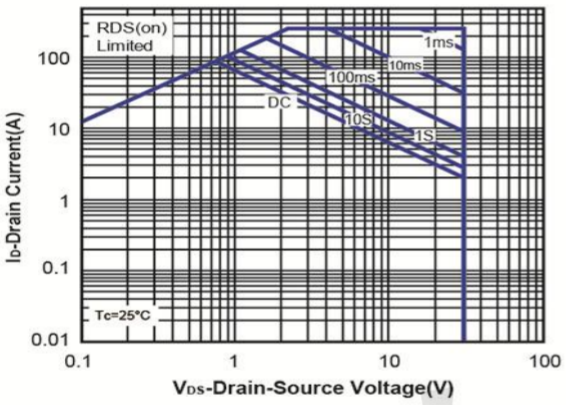
Gate Charge



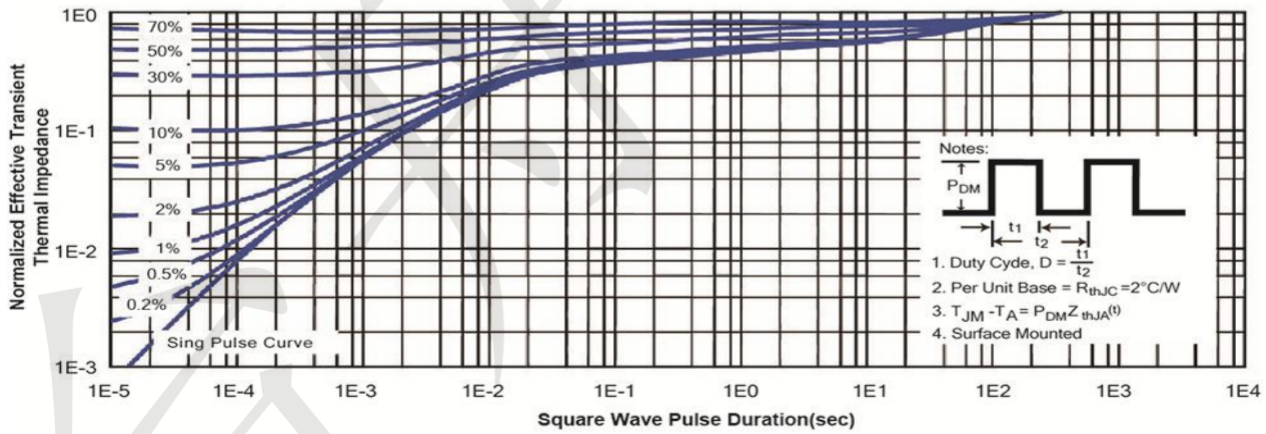
Body-diode characteristics



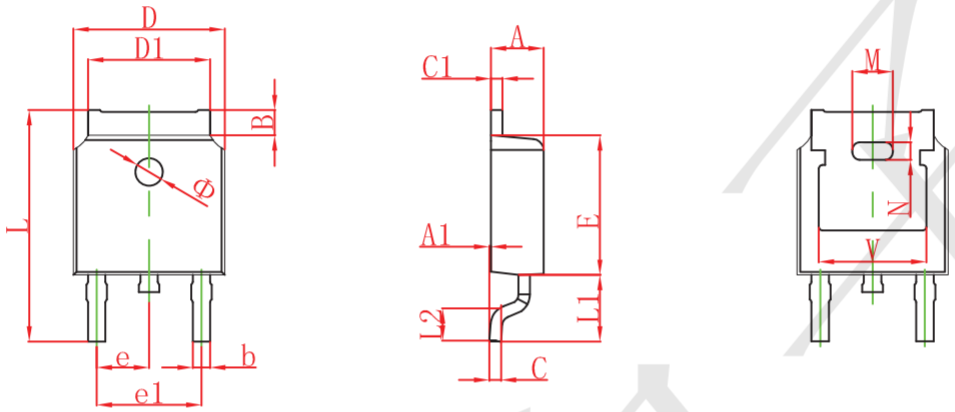
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



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	1.778REF.		0.070REF.	
N	0.762REF.		0.018REF.	
L	9.800	10.400	0.386	0.409
L1	2.9REF.		0.114REF.	
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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