TECH PUBLIC
台舟电子

TPM30160NK3

N-Channel Enhancement Mode Power MOSFET

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Features

- V_{DS} = 30V
- $R_{DS(ON)}$ = 1.6mΩ @ V_{GS}=10 @I_{DS}=30A
- $R_{DS(ON)}$ = 2.1mΩ @ V_{GS}=4.5 @I_{DS}=25A

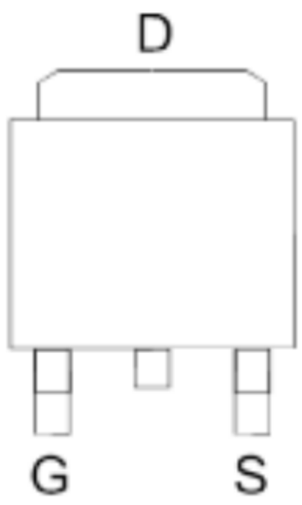
Application

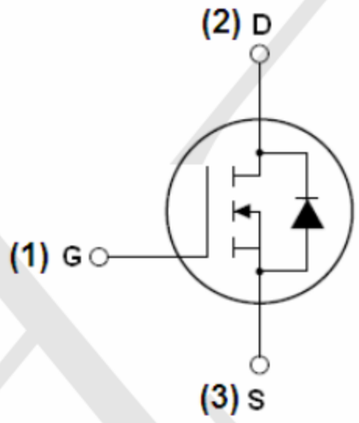
- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

Package and Pin Configuration

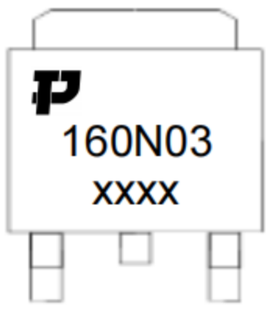
(TO-252-3L)

Top View





Marking:



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

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	Continuous	I_D	150	A
	Pulsed		340	
Total Power Dissipation	@TA=25℃	P_D	90	W
Operating Junction Temperature Range		T_J	-55 to 150	℃

Electrical Characteristics (T_A=25℃unless otherwise noted)

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ**	**Max**	**Units**
OFF CHARACTERISTICS (Note 2)						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS}=0 V	30			V
I_{DSS}	Drain to Source Leakage Current	V_{DS}= 24V, V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=20 V			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1	1.7	3.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance [2]	V_{GS}=4.5V, I_D=25A	-	2.1		mΩ
		V_{GS}=10V, I_D=30A		1.6	1.9	
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz		7032		pF
C_{oss}	Output Capacitance			898		pF
C_{rss}	Reverse Transfer Capacitance			743		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=10V, V_{DS}=15V, I_D=30A		80		nC
Q_{gs}	Gate Source Charge			19		nC
Q_{gd}	Gate Drain Charge			38		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=15V, R_{GEN}=1Ω I_D=1A		20		ns
$t_{d(off)}$	Turn-Off Delay Time			80		ns
$t_{d(r)}$	Turn-On Rise Time			36		ns
$t_{d(f)}$	Turn-Off Fall Time			33		ns

Thermal Resistance

Symbol	Parameter	Typ	Max	Units
$R_{\theta JC}$	Junction to Case	-	2	℃/W
$R_{\theta JA}$	Junction to Ambient (t≦10s)	-	50	℃/W

TypicalCharacteristics

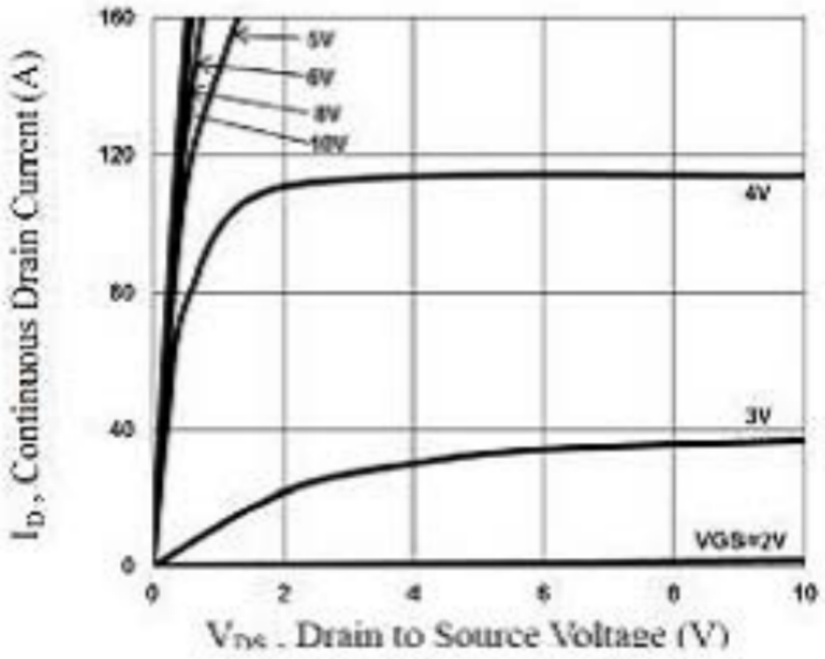


Figure 1: Typical Output Characteristics

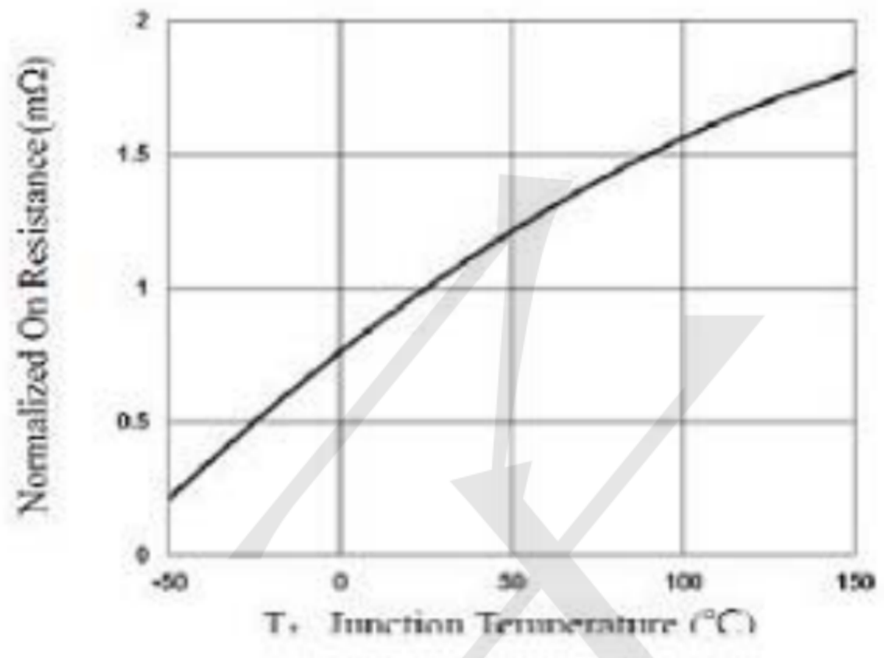


Figure 2: Normalized RDSON vs. TJ

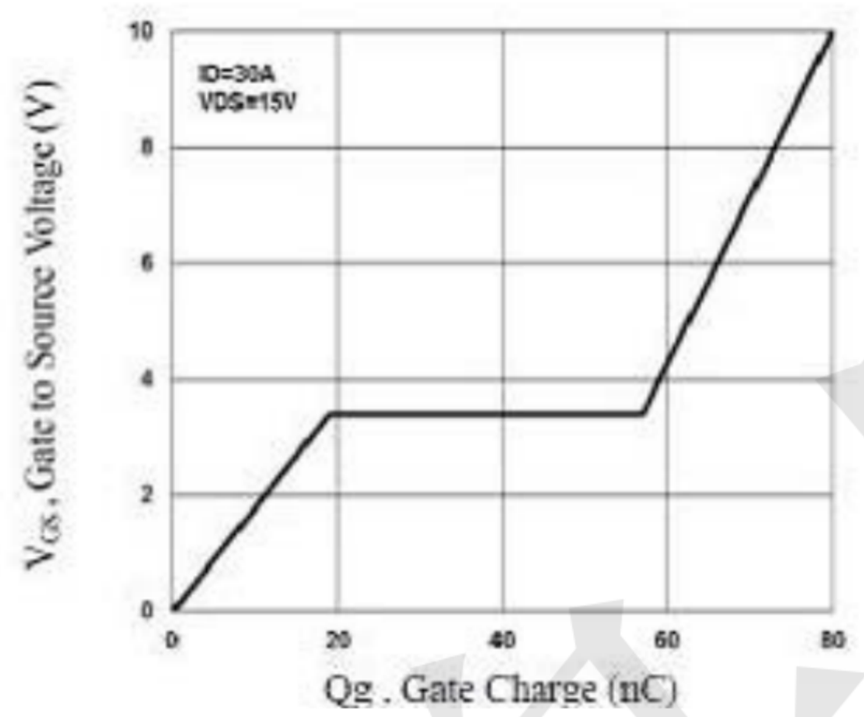


Figure 3: Gate-Charge Characteristics

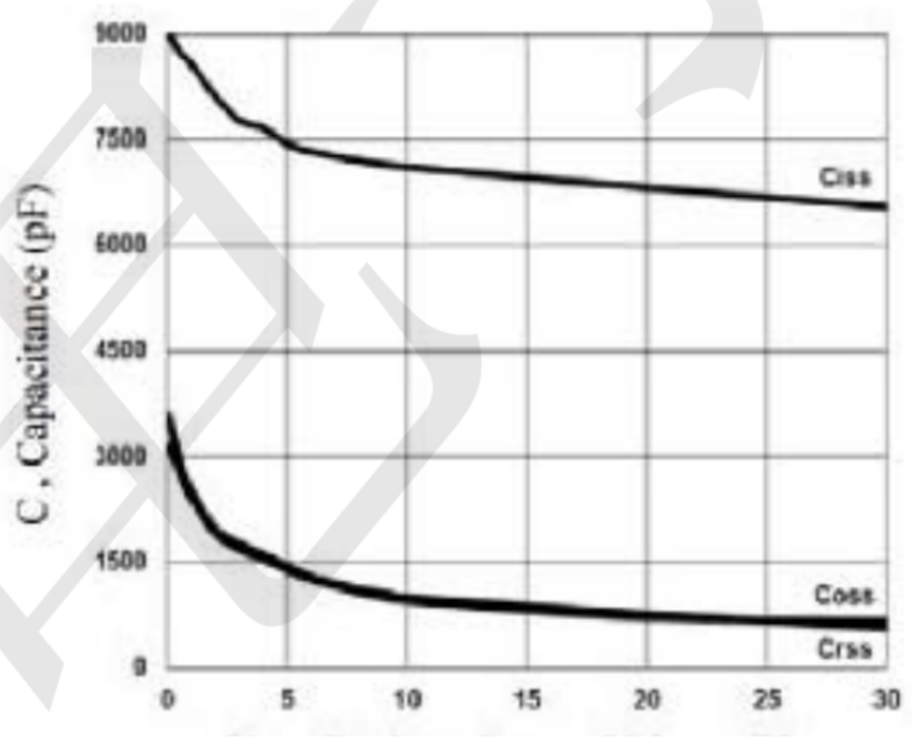


Figure 4: Capacitance Characteristics

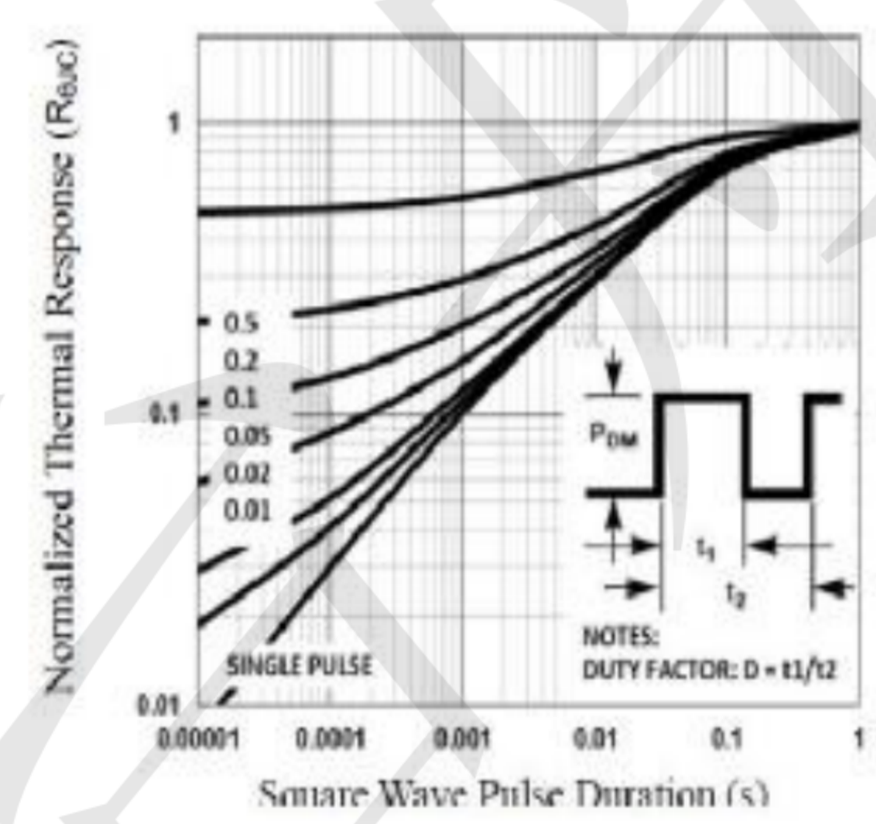


Figure 5: Normalized Thermal transient Impedance Curve

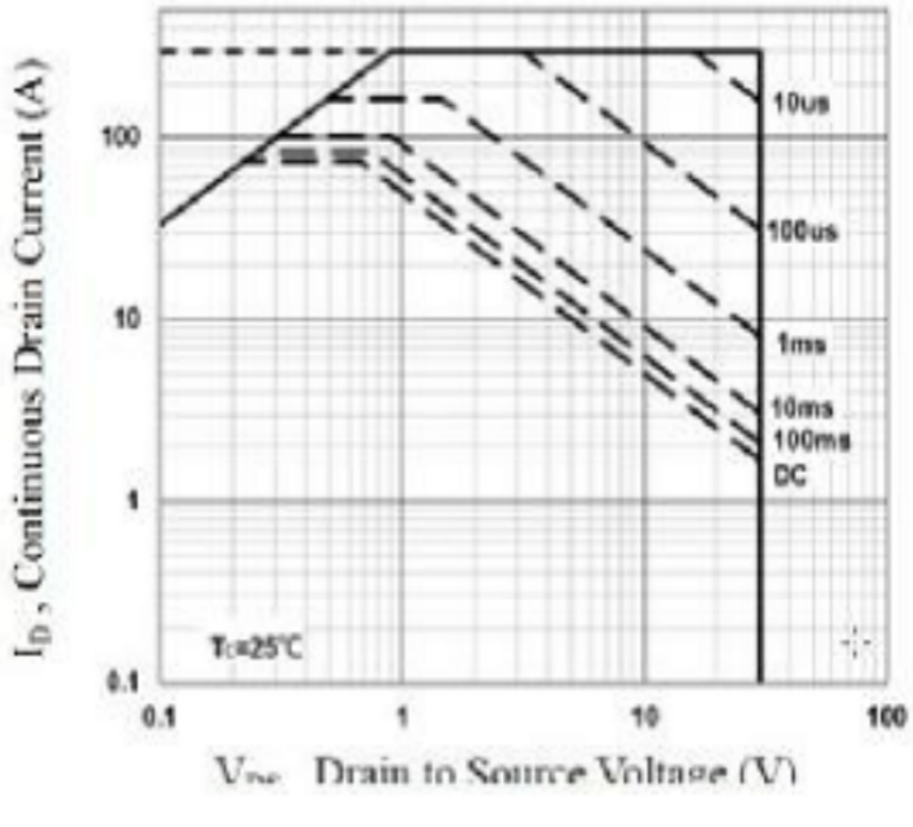
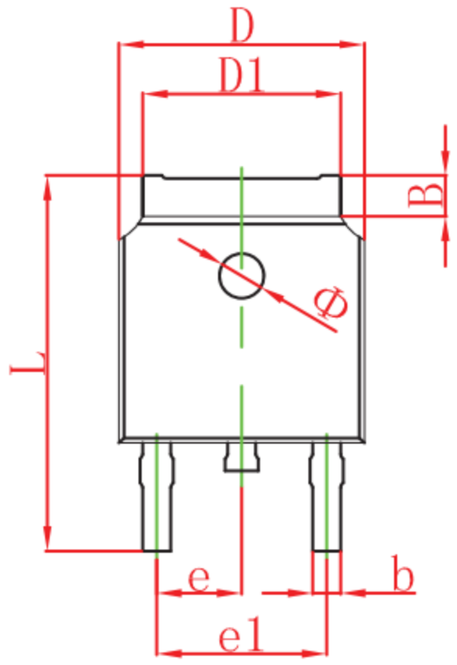
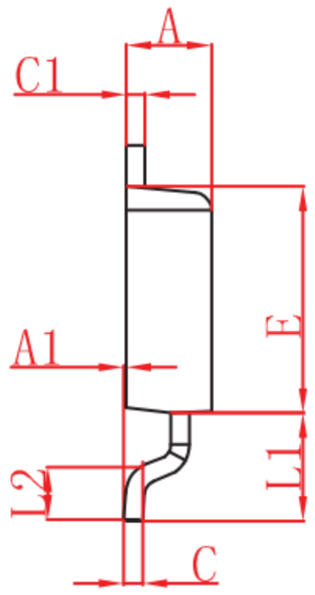
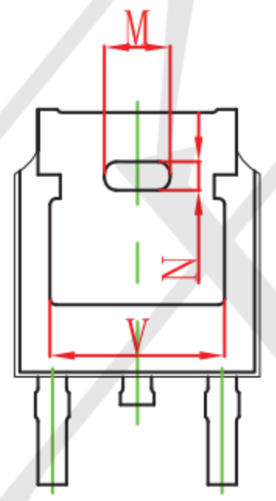


Figure 6: Maximum Safe Operation Area

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