

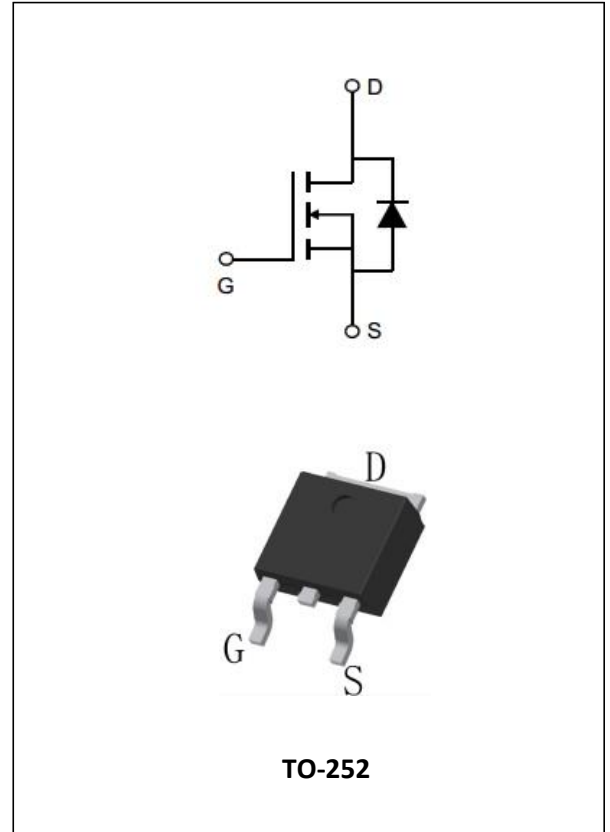
Silicon N-Channel Power MOSFET

Description

MDT4N65, This Power MOSFET is produced using Wisdom’s advanced planar stripe, DMOS technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies, active power factor correction, electronic lamp ballasts based on half bridge topology.

KEY CHARACTERISTICS

- ① $V_{DS} = 650V, I_D = 4A R_{DS(ON)} < 2.5\Omega @ V_{GS} = 10V$
- ② Gate Charge (Typical 15nC)
- ③ Improved dv/dt Capability, High Ruggedness
- ④ 100% Avalanche Tested
- ⑤ Maximum Junction Temperature Range (150°C)



ORDERING INFORMATION

Ordering Codes	Package	Product Code	Packing
MDT4N65	TO-252	MDT4N65	Tube

ABSOLUTE RATINGS at TC=25°C, unless otherwise specified

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	650	V
I_D	Continuous Drain Current	4	A
	Continuous Drain Current $T_C = 100\text{ }^\circ\text{C}$	2.5	A
I_{DM}	Pulsed Drain Current(Note1)	16	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy(Note2)	240	mJ
dv/dt	Peak Diode Recovery dv/dt(Note3)	4.5	V/ns
P_D	Power Dissipation TO-252	50	W
	Derating Factor above 25°C	0.18	W/°C



TLT _J , T _{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	°C
	Maximum Temperature for Soldering	300	°C

Thermal characteristics

Thermal characteristics (No FullPAK) TO-252

Symbol	Parameter	RATINGS	Units
R _{θJC}	Junction-to-Case	5.5	°C/W
R _{θJA}	Junction-to-Ambient	62.5	°C/W

Electrical Characteristics At TC=25°C, unless otherwise specified

OFF Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	650	--	--	V
ΔBV _{DSS} /ΔT _J	Bvdss Temperature Coefficient	I _D =250μA, Reference 25°C	--	0.6	--	V/°C
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 600V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
		V _{DS} = 480V, V _{GS} = 0V, T _J = 125°C	--	--	100	μA
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +30V	--	--	100	nA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -30V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
R _{DS(ON)}	Drain-to-Source On-Resistance	V _{GS} =10V, I _D =1.0A(Note4)	--	2	2.5	Ω
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA(Note4)	2.0	--	4.0	V

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
R _g	Gate resistance	f = 1.0MHz	--	25	--	Ω
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V F = 1.0MHz	--	545	710	PF
C _{oss}	Output Capacitance		--	60	80	
C _{rss}	Reverse Transfer Capacitance		--	8	11	

Switching Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	I _D = 2.0A V _{DD} = 300V V _{GS} = 10V R _G = 25Ω	--	10	30	ns
T _r	Rise Time		--	30	80	
t _{d(OFF)}	Turn-Off Delay Time		--	45	11	
t _f	Fall Time		--	40	90	
Q _g	Total Gate Charge	I _D = 2.0A V _{DS} = 480V V _{GS} = 10V	--	15	20	nC
Q _{gs}	Gate to Source Charge		--	2.8	--	
Q _{gd}	Gate to Drain ("Miller") Charge		--	6	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min	Typ.	Max.	
I _S	Continuous Source Current (Body Diode)	T _C = 25 °C	--	--	4	A
I _{SM}	Maximum Pulsed Current (Body Diode)		--	--	16	A
V _{SD}	Diode Forward Voltage	I _S = 2A, V _{GS} = 0V	--	--	1.4	V
T _{rr}	Reverse Recovery Time	I _S = 2A, di _F /dt = 100A/us, V _{GS} = 0V	--	350	--	ns
Q _{rr}	Reverse Recovery Charge		--	2.2	--	nC

NOTES

- 1.Repeativity rating : pulse width limited by junction temperature
- 2.L = 55mH, I_{AS} = 4.0A, V_{DD} = 50V, R_G = 25Ω , Starting T_J = 25°C
- 3.I_{SD} ≤ 4.0A, di/dt ≤ 200A/us, V_{DD} ≤ BVDSS, Starting T_J = 25°C
- 4.Pulse Test : Pulse Width ≤ 300us, Duty Cycle ≤ 2%
- 5.Essentially independent of operating temperature.

Characteristics Curves

Figure 1. On-Region Characteristics

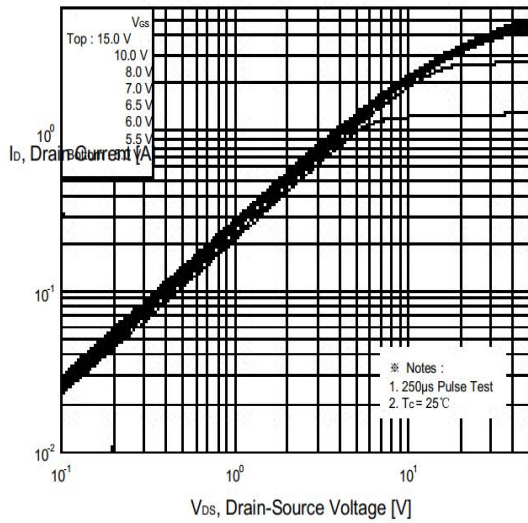


Figure 2. Transfer Characteristics

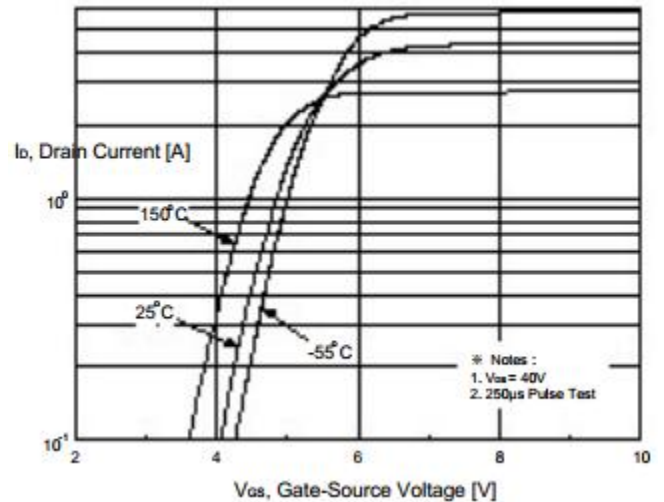


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

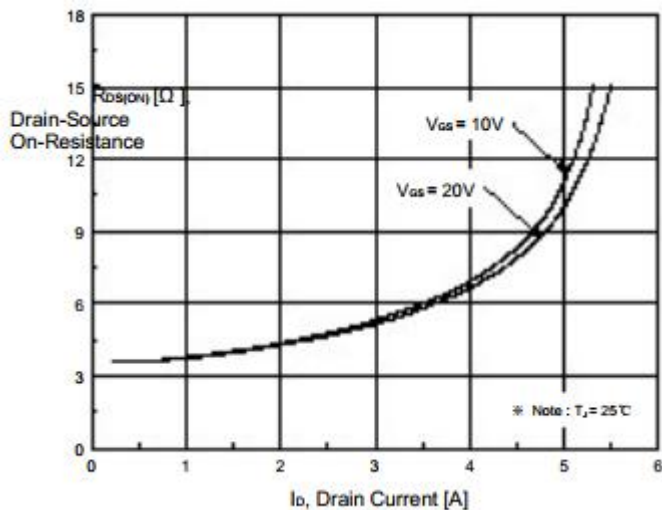


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

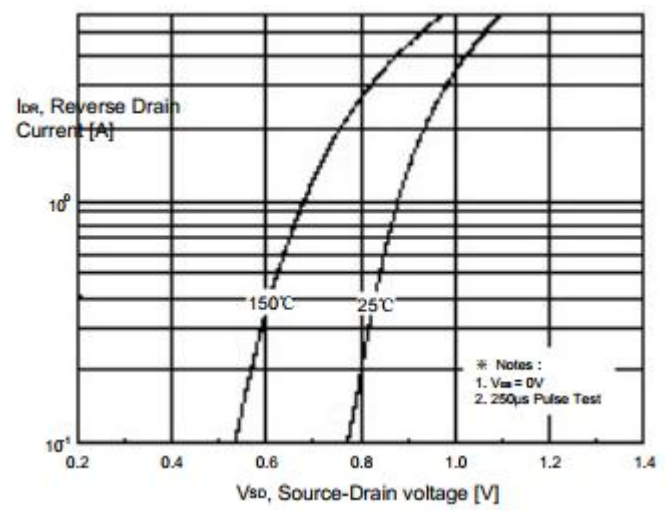


Figure 5. Capacitance Characteristics

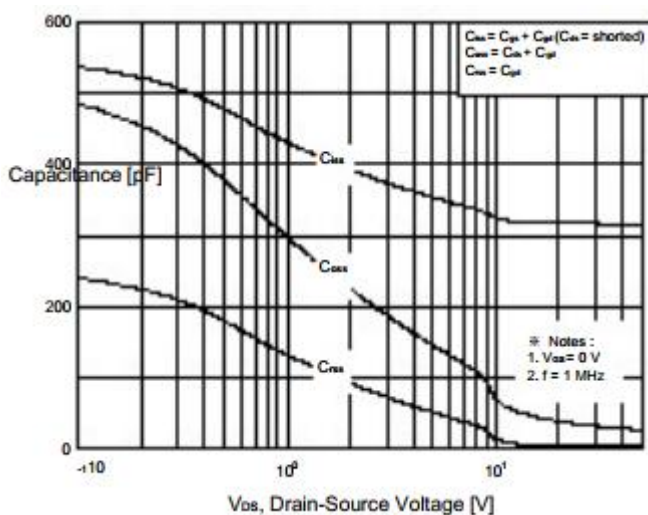


Figure 6. Gate Charge Characteristics

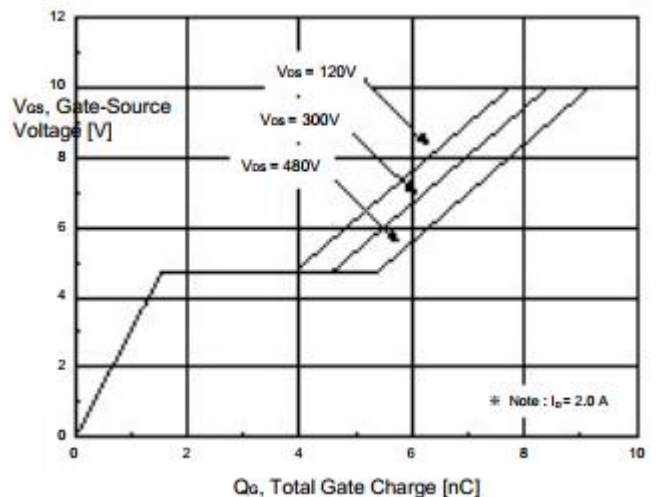


Figure7.BreakdownVoltageVariation

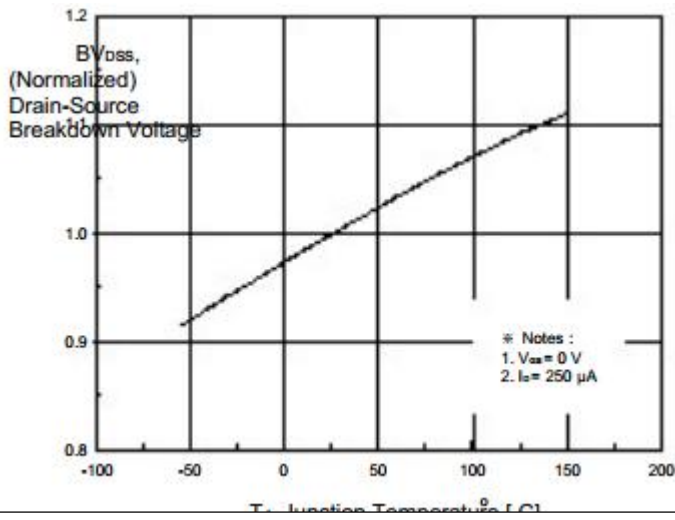


Figure8.On-ResistanceVariation

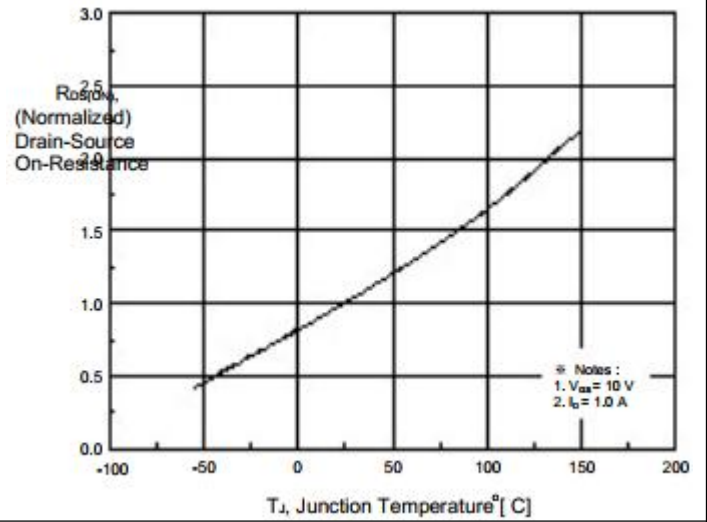


Figure9.Maximum Safe Operating Area

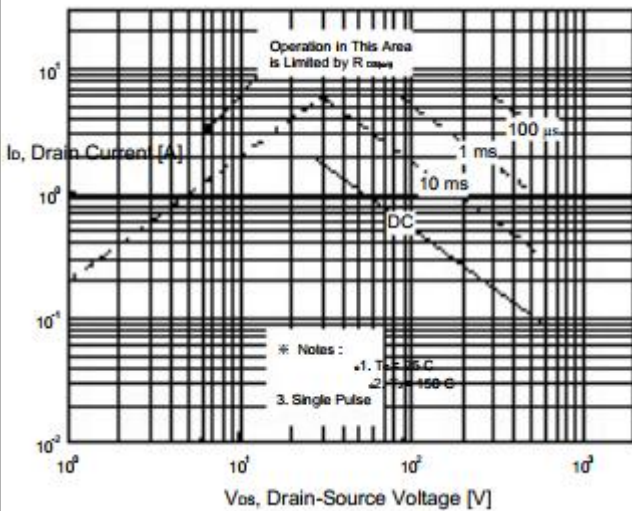


Figure10.Maximum Drain Current Vs Case Temperature

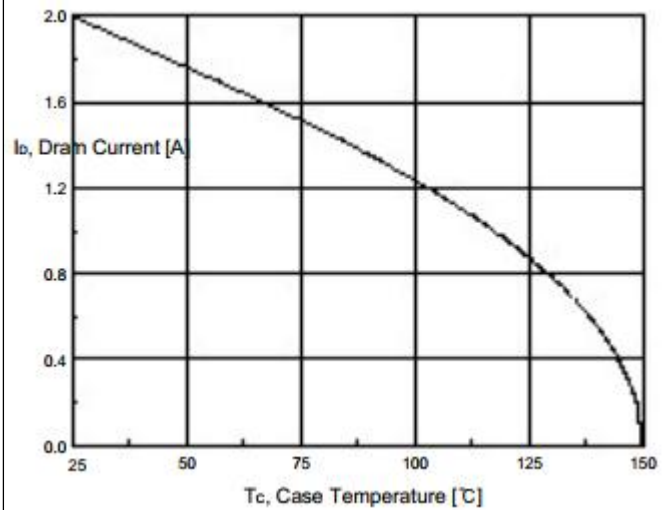
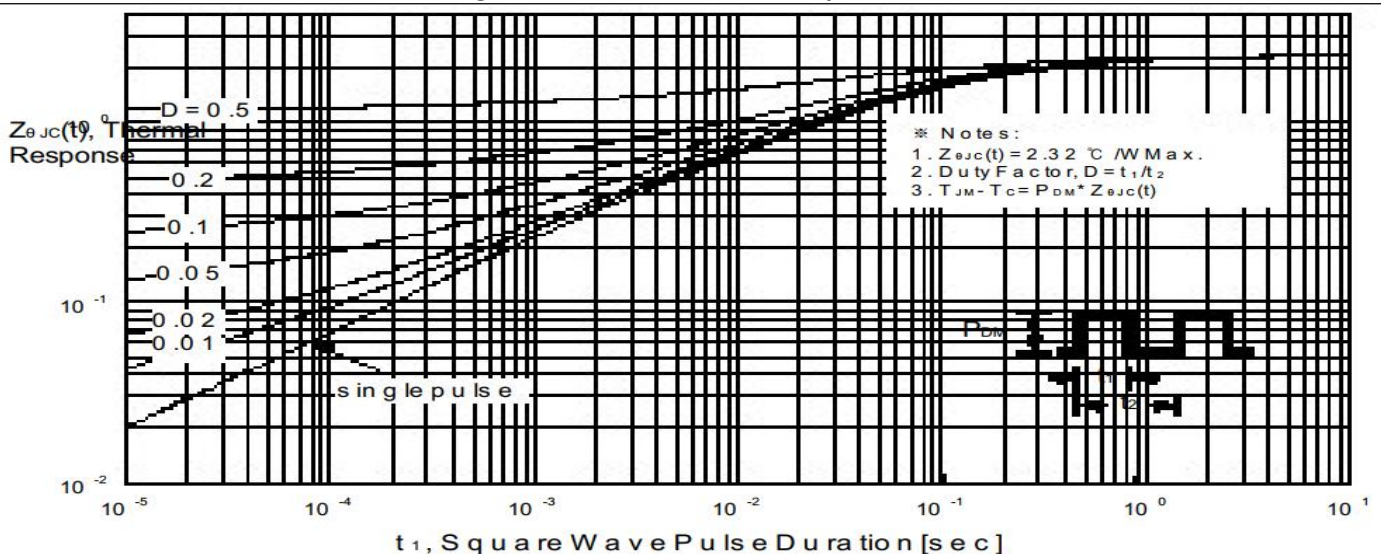
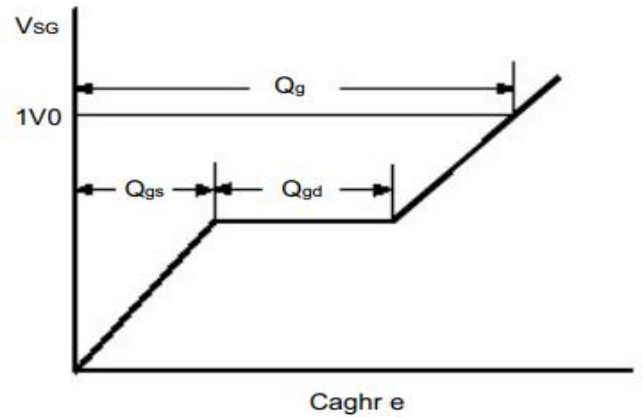
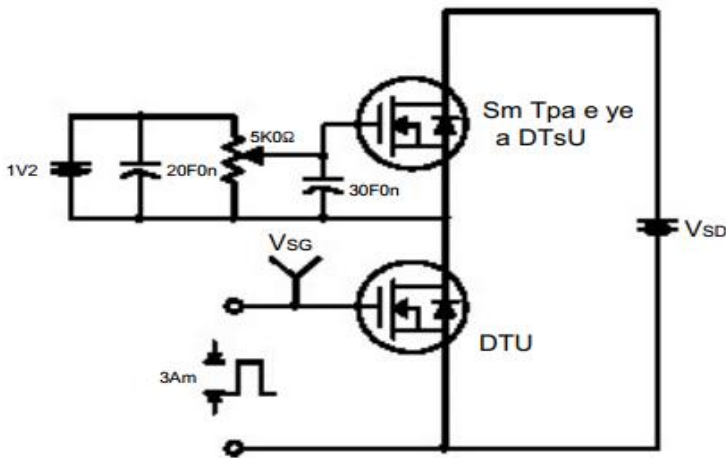


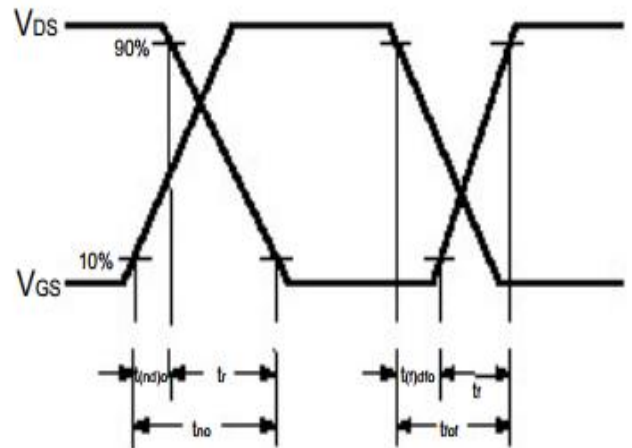
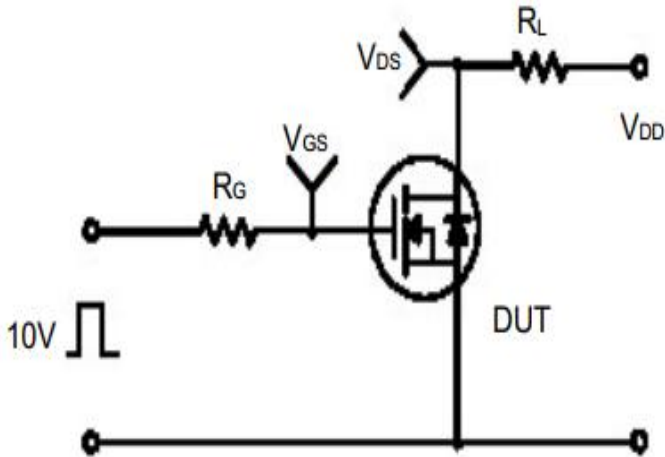
Figure11.TransientThermalResponseCurve



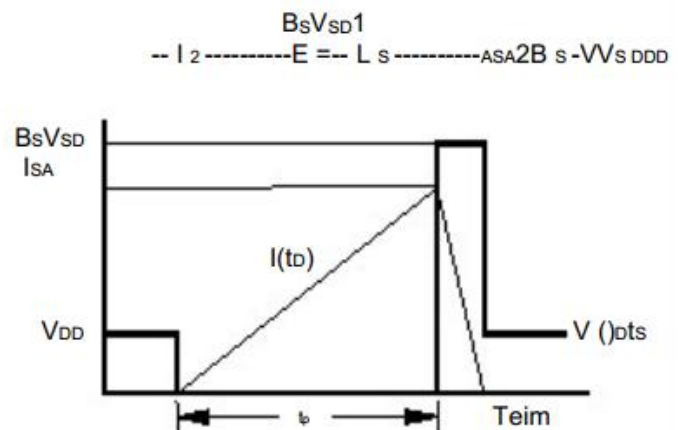
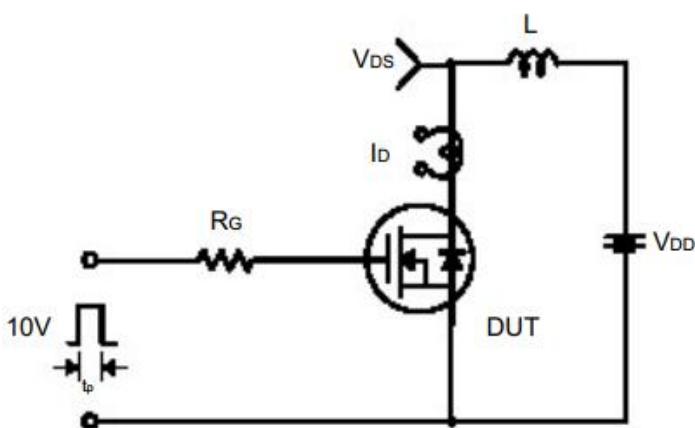
Gate Charge Test Circuit & Waveform



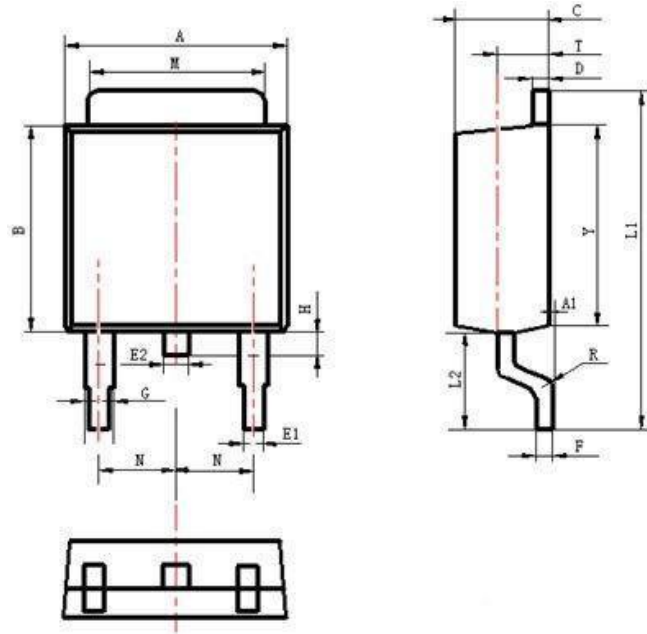
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Description



Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.60
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

TO-252 Package



NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change without prior notice.

CONTACT:

深圳市迈诺斯科技有限公司（总部）

地址：深圳市福田区华富街道田面社区深南中路4026号田面城市大厦22B-22C

邮编：518025

电话：0755-83273777

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [Minos](#) manufacturer:

Other Similar products are found below :

[IRFD120](#) [IRFY240C](#) [JANTX2N5237](#) [2SK2267\(Q\)](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#)
[IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#) [TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [EFC2J004NUZTDG](#)
[DMN1053UCP4-7](#) [SQJ469EP-T1-GE3](#) [NTE2384](#) [DMC2700UDMQ-7](#) [DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#)
[DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#)
[DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#) [IPB80P04P405ATMA2](#) [2N7002W-G](#) [MCAC30N06Y-](#)
[TP](#) [MCQ7328-TP](#) [NTMC083NP10M5L](#) [NVMFS2D3P04M8LT1G](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#) [WMJ80N60C4](#) [BXP2N20L](#)
[BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#) [TSM60NB380CP](#) [ROG](#) [RQ7L055BGTCR](#) [DMNH15H110SK3-13](#)