

N-Channel Enhancement Mode Power MOSFET

Description

The MPF12N65 uses advanced trench technology and design to provide excellent RDS(ON)with low gate charge. It can be used in a wide variety of applications.

General Features

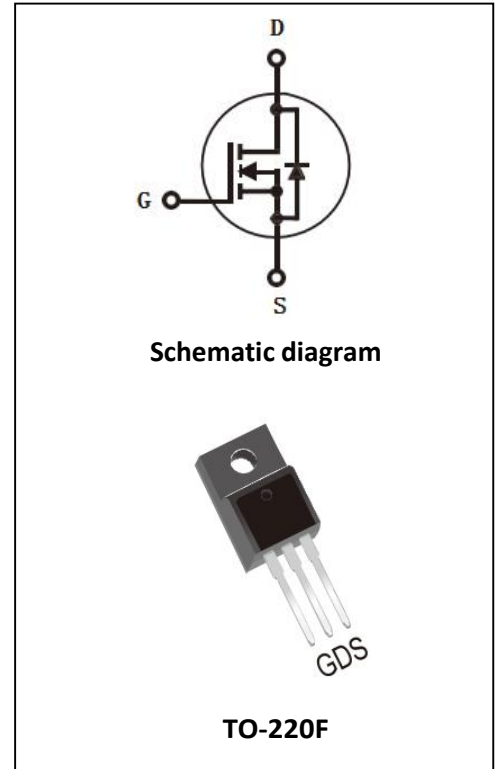
- ① $V_{DS}=12A, I_D=650V$
- ② $R_{DS(on)(typ)}=0.58\Omega @ V_{GS}=10V, I_D=6.0A$
- ③ Low Crss:18.5pF@25V
- ④ Fast switching
- ⑤ Improved dv/dt capability

Application

- ① Power switching application
- ② Hard switched and high frequency circuits
- ③ Uninterruptible Power Supply

Package Marking and Ordering Information

Ordering Codes	Package	Product Code	Packing
MPF12N65	TO-220F	MPF12N65	Tube



Electronic Characteristics (Tc=25°C)

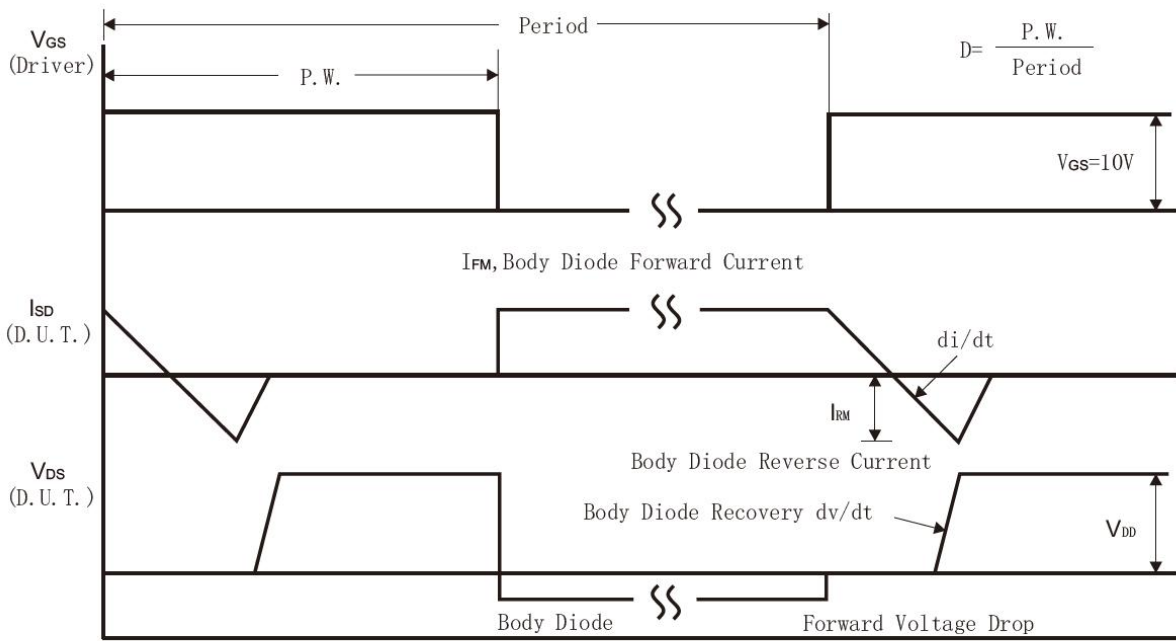
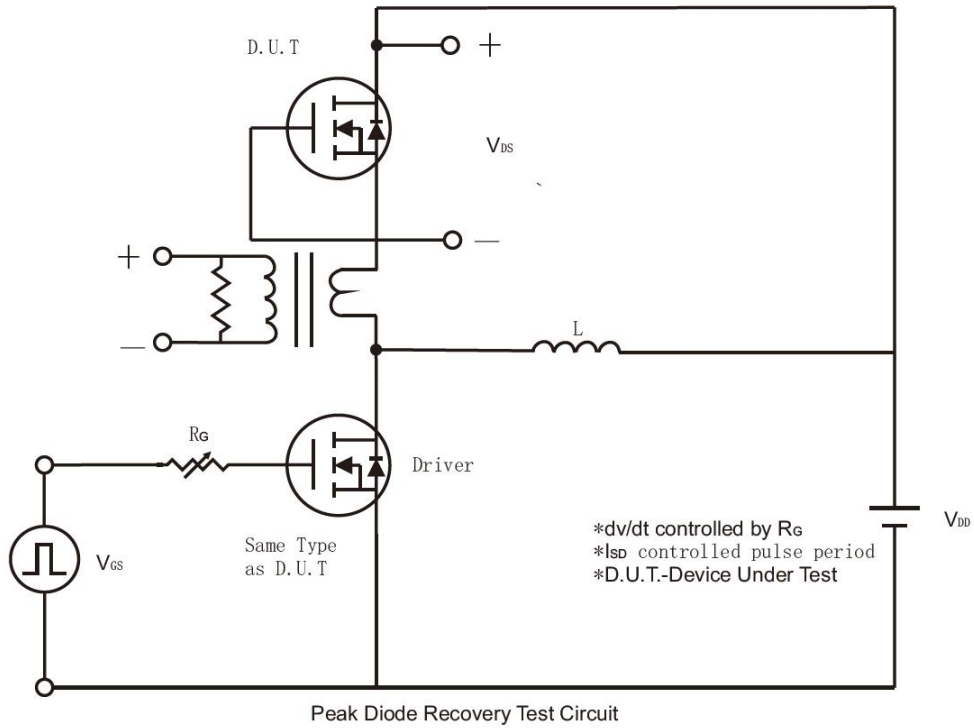
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BVDSS	$V_{GS}=0V, I_D=250\mu A$	650			V
Breakdown Voltage Temperature Coefficient	$\Delta BVDSS / \Delta T_j$	$I_D=250\mu A$, Referenced to 25°C		0.65		V/°C
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	3.0		4.0	V
Drain-source Leakage Current	IDSS	$V_{DS}=650V, V_{GS}=0V, T_j=25^\circ C$			1	μA
		$V_{DS}=520V, V_{GS}=0V, T_j=125^\circ C$			100	μA
Gate-body Leakage Current(VDS=0)	IGSS	$V_{GS}=\pm 30V$			± 100	nA
Static Drain-source On Resistance	RDS(ON)	$V_{GS}=10V, I_D=6.0A$ III		0.58	0.68	Ω
Input Capacitance	Ciss			1540		pF
Onput Capacitance	Coss	$V_{GS}=0V, V_{DS}=25V, F=1.0MHZ$		175		pF

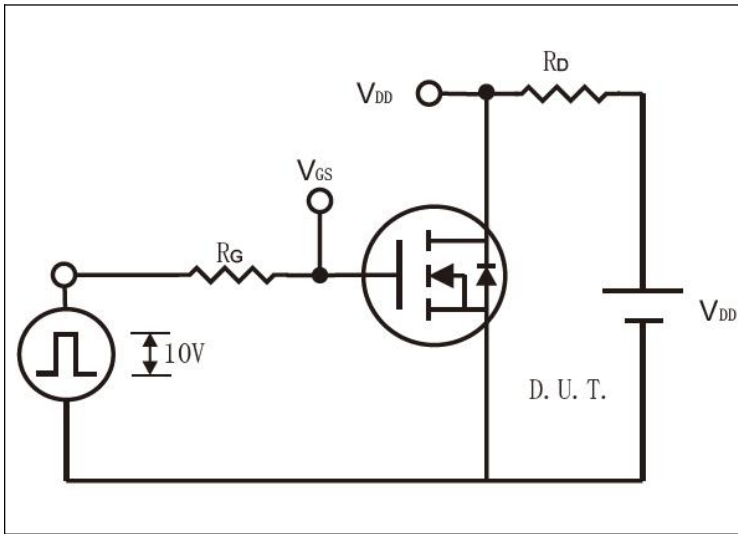
Reverse Transfer Capacitance	Crss			18.5		pF
Turn-On Delay Time	Td(on)	VDD=325V, ID=12.0A RG=25Ω III		30		ns
Turn-On Rise Time	Tr			15		ns
Turn-Off Delay Time	Td(off)			95		ns
Turn-Off Fall Time	Tf			22		ns
Total Gate Charge	Qg		ID=12.0A, VDS=520V VGS=10V		44	
Gate-to-Source Charge	Qgs			8.6		nC
Gate-to-Drain Charge	Qgd			21		nC
Continuous Diode Forward Current	Is				12.0	A
Diode Forward Voltage	VSD	Tj=25°C, Is=12.0A VGS=,0V III			1.4	V
Reverse Recovery Time	Trr	Tj=25°C, If=12.0A di/dt=100A/μS III		380		ns
Reverse Recovery Charge	Qrr			4.5		uC

Notes:

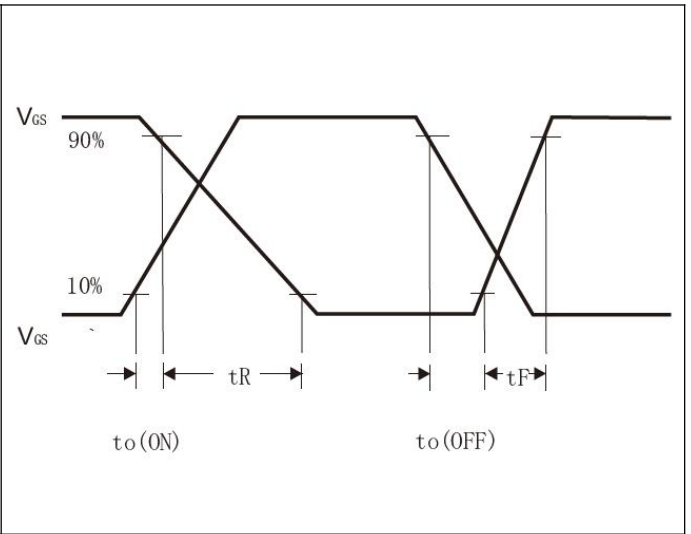
1. Repetitive rating: Pulse width limited by maximum junction temperature
2. Starting Tj=25°C, VDD=50V, L=10mH, RG=25Ω, IAS=9.0A
3. PulseTest: Pulse width ≤ 300μs, Duty cycle ≤ 2%

TEST CIRCUITS AND WAVEFORMS

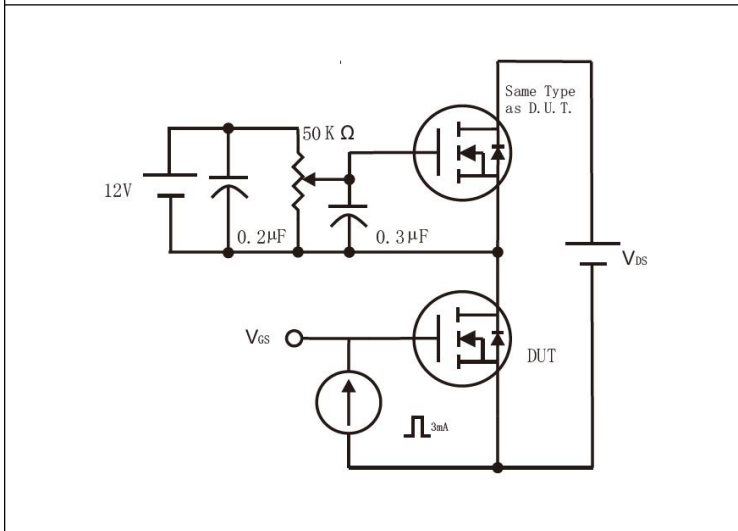




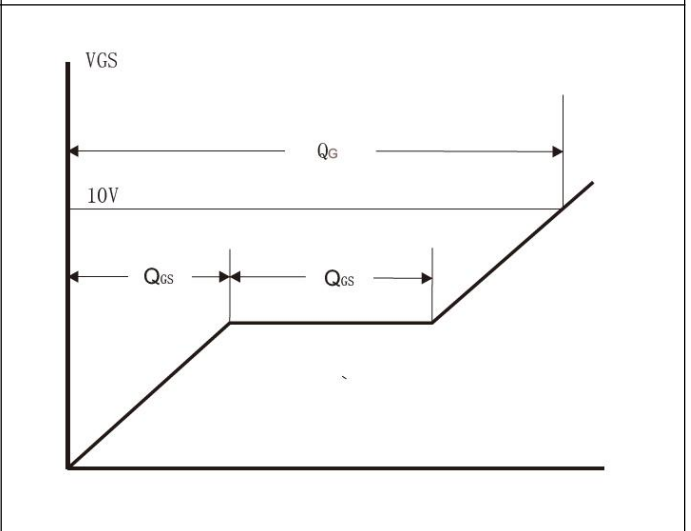
Switching Test Circuit



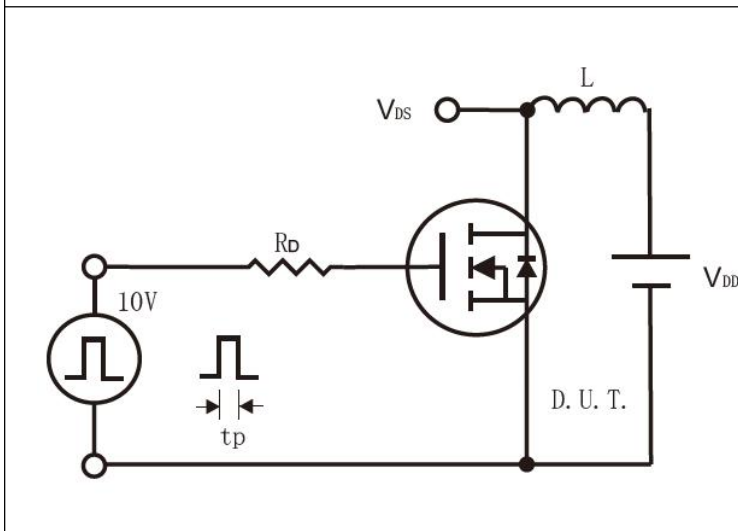
Switching Waveforms



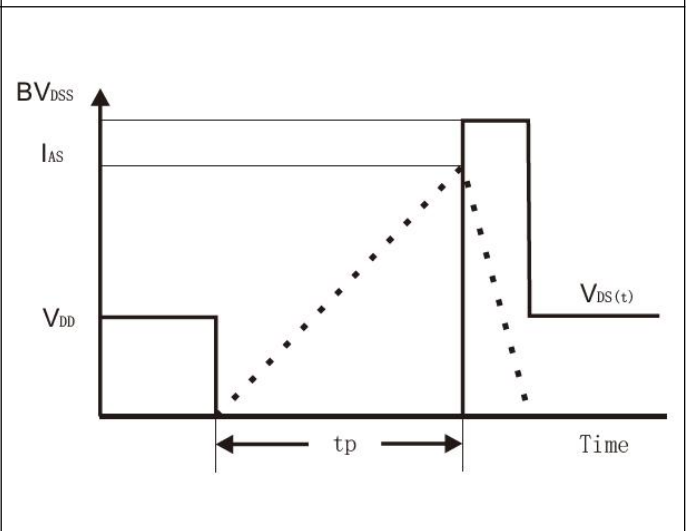
Gate Charge Test Circuit



Gate Charge Waveform

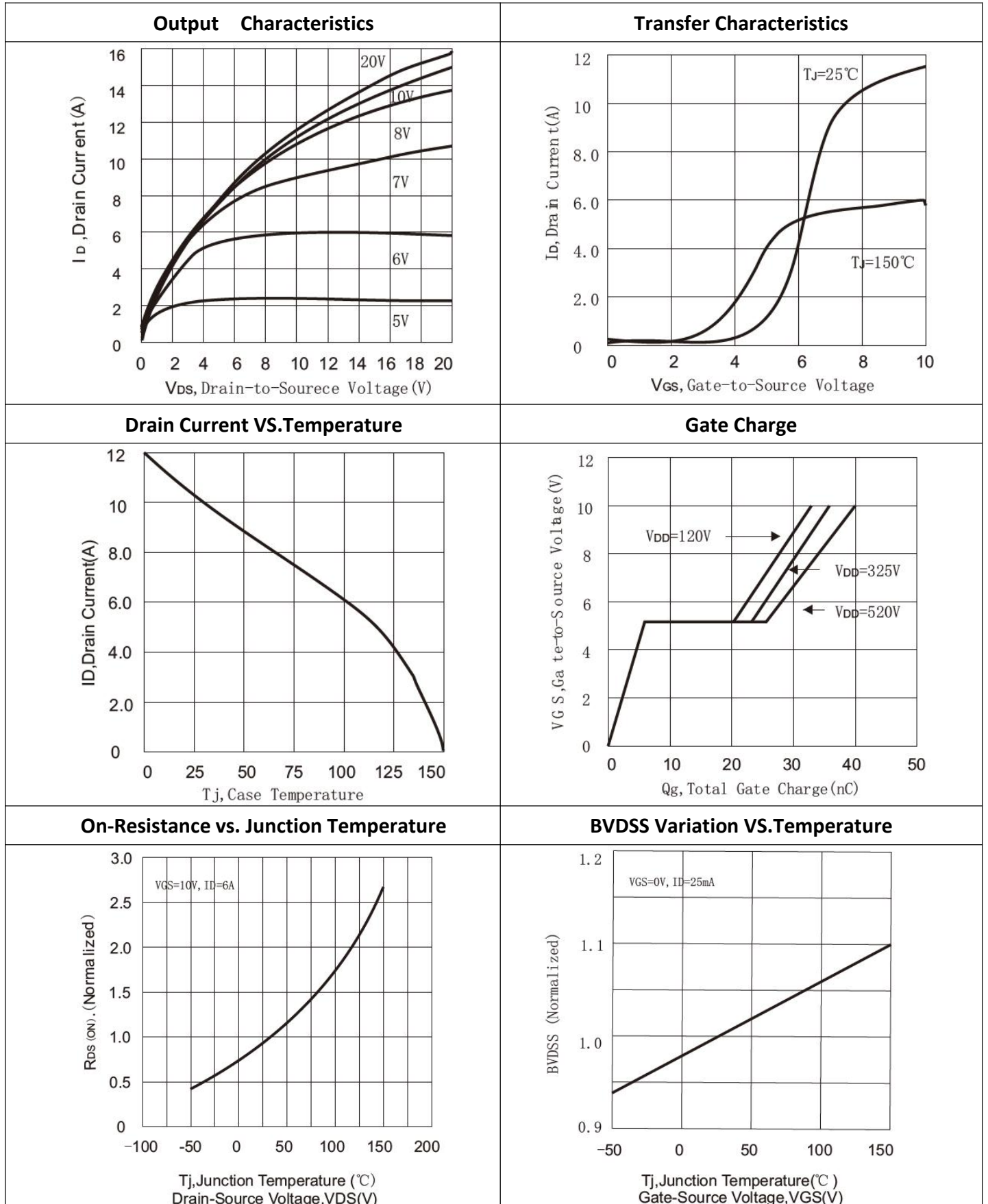


Unclamped Inductive Switching Test Circuit

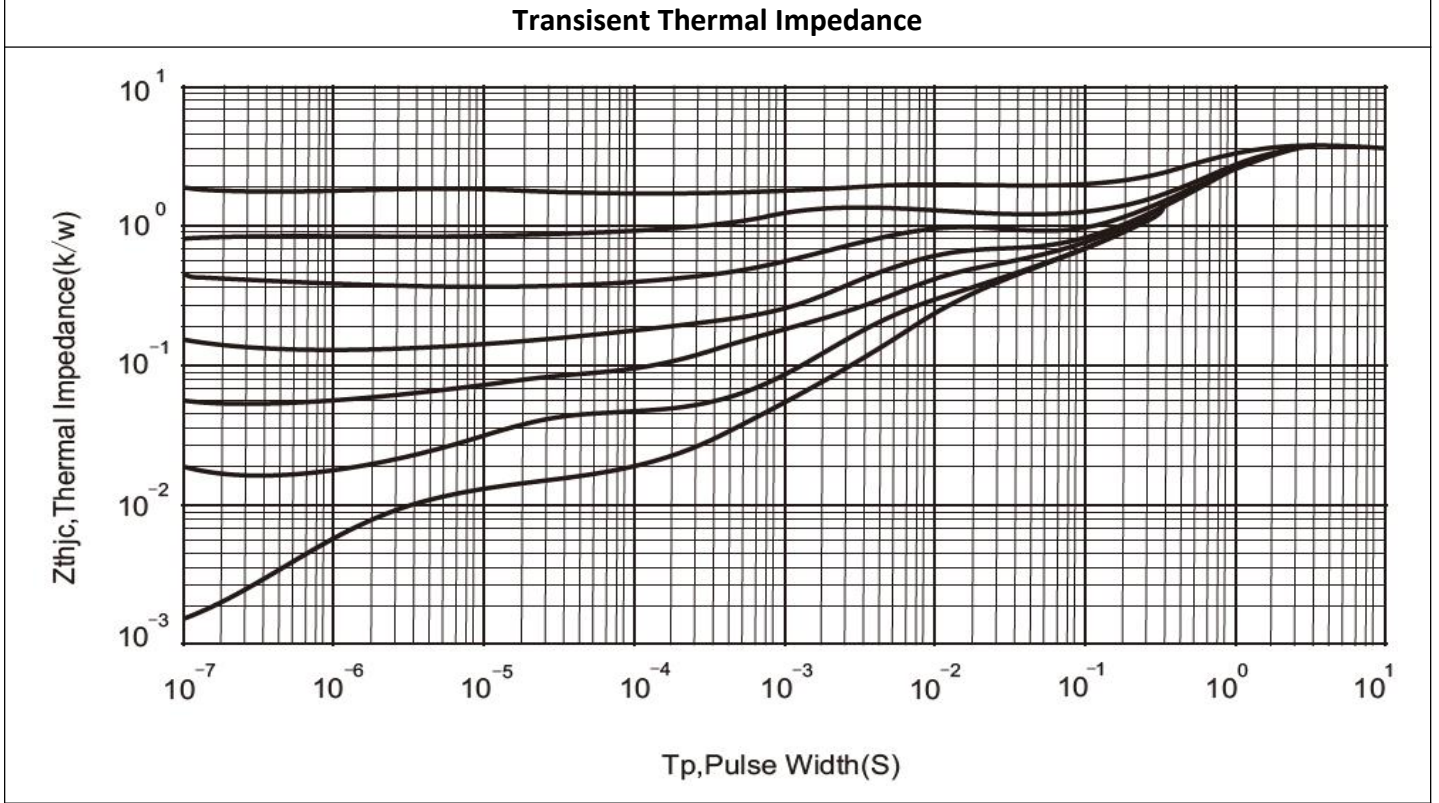
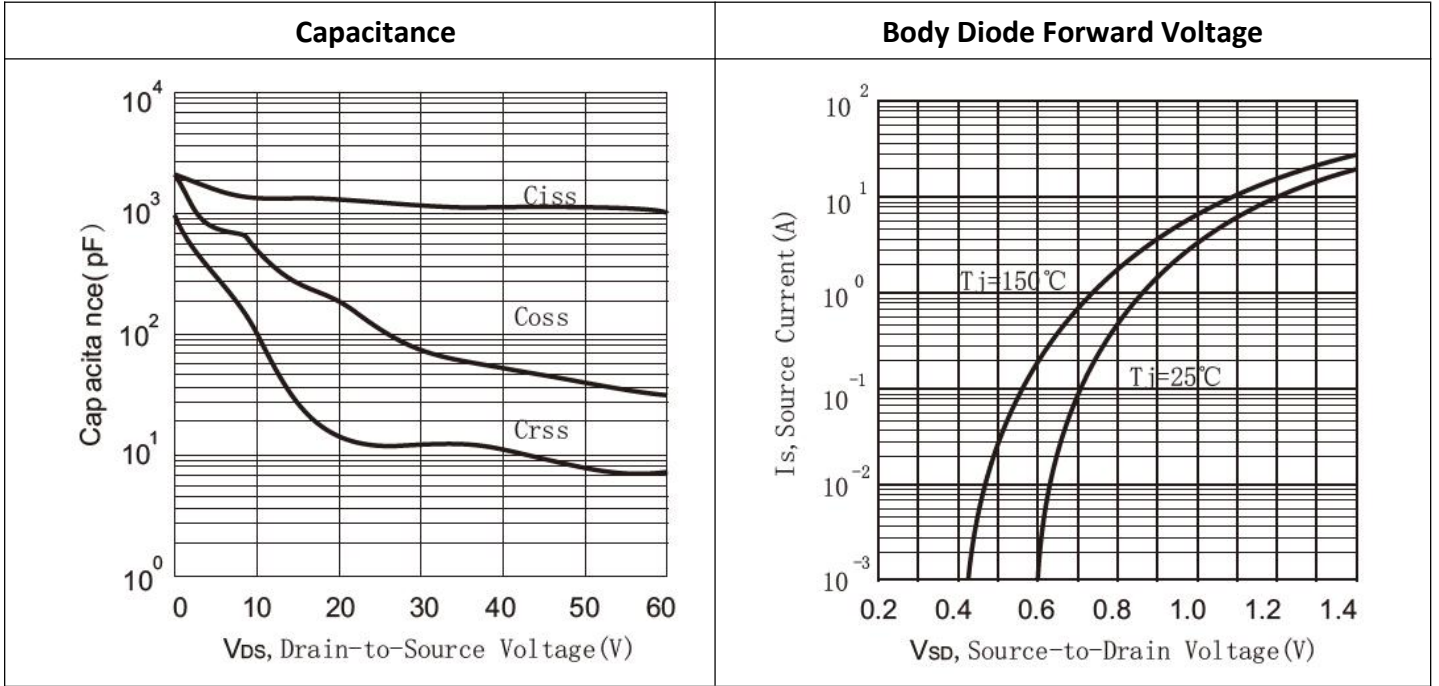


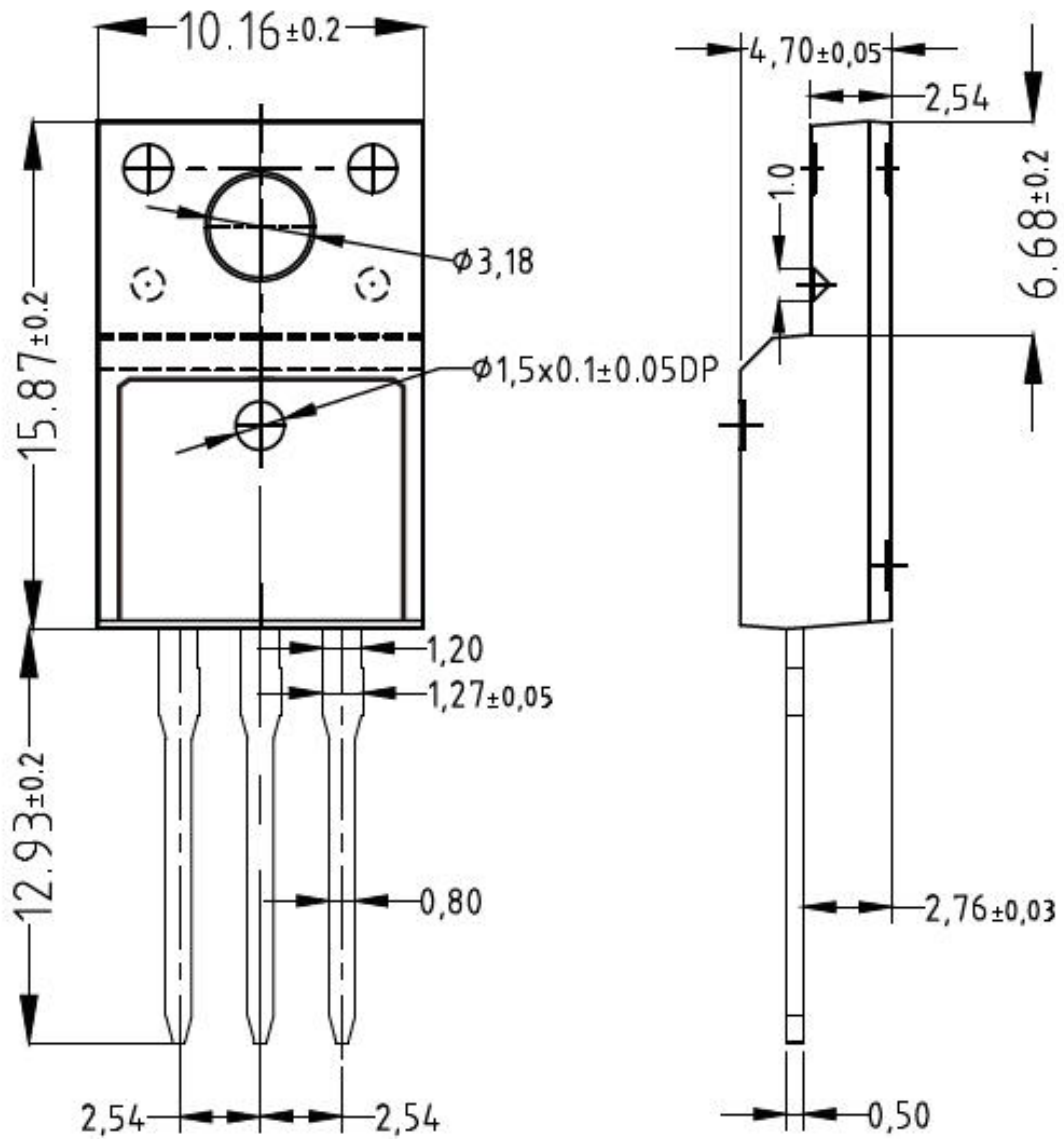
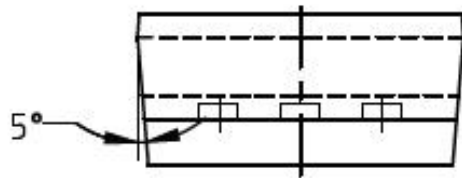
Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS







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.

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