

Description

MLS65R580P, the silicon N-channel Enhanced MOSFETs, is obtained by advanced Super Junction technology which reduce the conduction loss, improve switching performance. The transistor is suitable device for SMPS, high speed switching and general purpose applications.

KEY CHARACTERISTICS

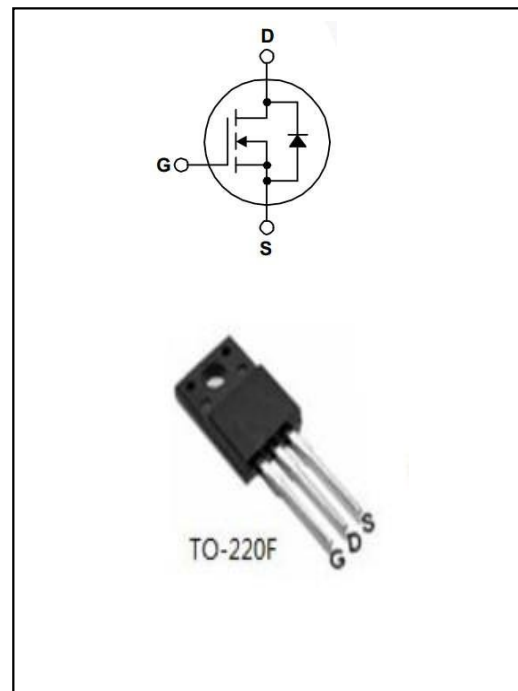
- ① $V_{DS}=650V, I_D=8A, R_{DS(ON)} < 0.58\Omega @ V_{GS}=10V$

FEATURES

- ① Fast Switching
- ② 100% avalanche tested
- ③ Improved dv/dt capability

APPLICATIONS

- ① High frequency switching mode power supply



Package Marking And Ordering Information:

Ordering Codes	Package	Product Code	Packing
MLS65R580P	TO-220F	M65R580P	Tube

Electrical Characteristics @ $T_a=25^\circ\text{C}$ (unless otherwise specified)

Limited Parameters:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	650	V
I_D	Drain Current (continuous) at $T_c=25^\circ\text{C}$	8	A
I_{DM}	Drain Current (pulsed)	24	A
V_{GS}	Gate to Source Voltage	± 30	V
P_{tot}	Total Dissipation at $T_c=25^\circ\text{C}$	26	W
T_j	Max. Operating Junction Temperature	150	$^\circ\text{C}$
Eas	Single Pulse Avalanche Energy	140	mJ

Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	650			V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V, I_D=4.0A$		0.50	0.58	Ω
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=650V, V_{GS}=0V$			1.0	μA
$I_{GSS(F)}$	Gate-Source Forward Leakage	$V_{GS}=+30V$			100	nA
$I_{GSS(R)}$	Gate-Source Reverse Leakage	$V_{GS}=-30V$			-100	nA
C_{iss}	Input Capacitance	$V_{GS}=0V$ $V_{DS}=25$ $V_f=1.0MHz$		410.8		pF
C_{oss}	Output Capacitance			41.7		pF
C_{rss}	Reverse Transfer Capacitance			3.1		pF
Q_g	Total Gate Charge	$I_D=5.0A$ $V_{DD}=400V$ $V_{GS}=10V$		8.6		nC
Q_{gs}	Gate-Source Charge			2.2		nC
Q_{gd}	Gate-Drain Charge			3.8		nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$I_D=4.0A$ $V_{DD}=400V$ $V_{GS}=10$ $V_{RG}=25\Omega$		26.4		nS
t_r	Turn-on Rise Time			17.9		nS
$t_{d(off)}$	Turn-off Delay Time			56.2		nS
t_f	Turn-off Fall Time			14		nS

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)	$TC=25^\circ C$	--	--	18	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	24	A
V_{SD}	Diode Forward Voltage	$I_D=8A, V_{GS}=0V(\text{Note4})$	--	--	1.3	V
T_{rr}	Reverse Recovery Time	$I_S=4A,$ $T_j=25^\circ C$ $dI_F/dt=100A/\mu s, V_{GS}=0V$	--	214.3	--	ns
Q_{rr}	Reverse Recovery Charge		--	1.7	--	nC

Characteristics Curves

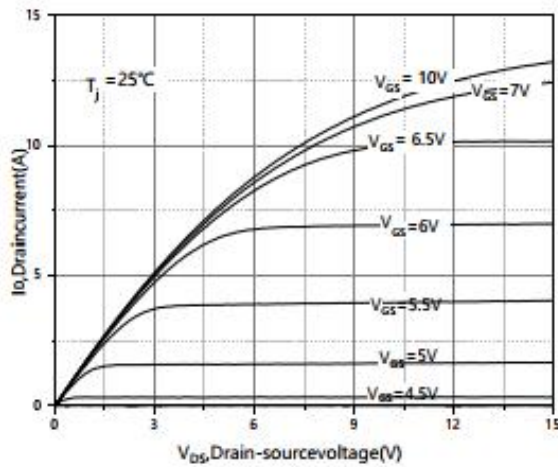


Figure1.T yp.out putcharacteristics

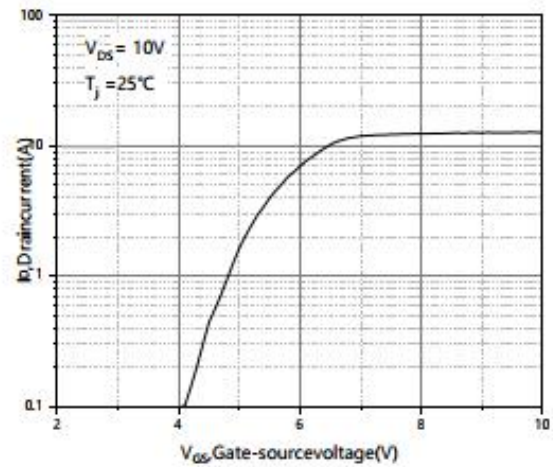


Figure2.T yp.transfercharacteristics

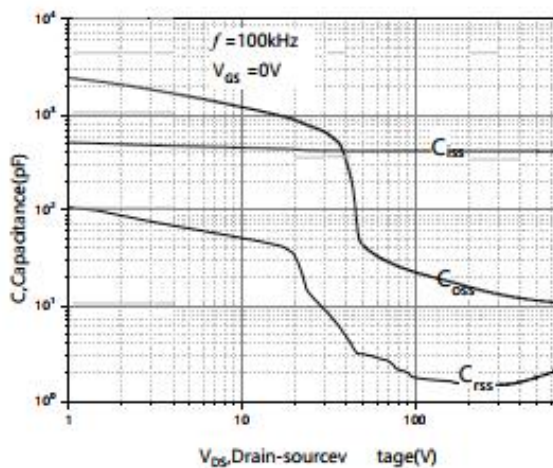


Figure3.T yp.capacitances

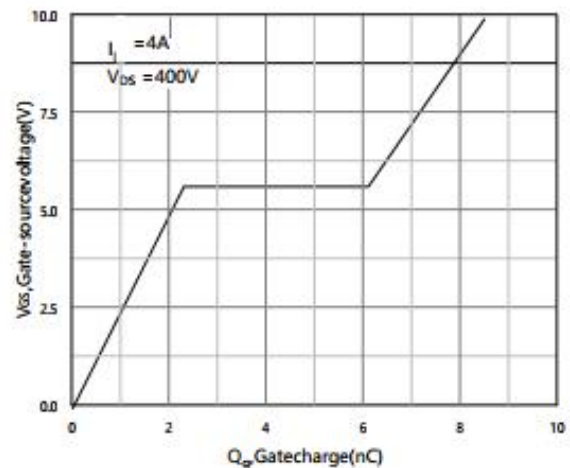


Figure4.T yp. gatecharge

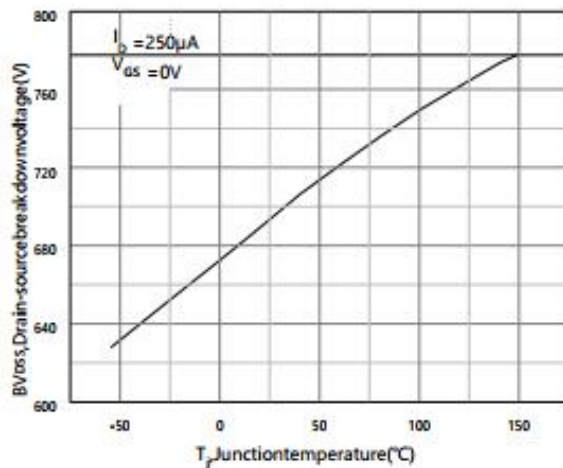


Figure5.Drain-sourcebreakdownvoltage

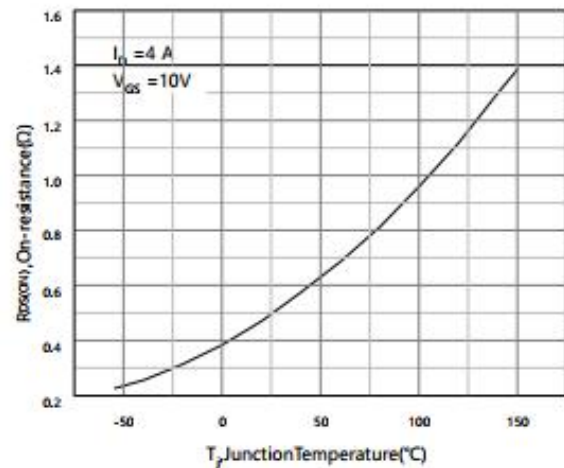


Figure6.Drain-sourceon-stateresistance

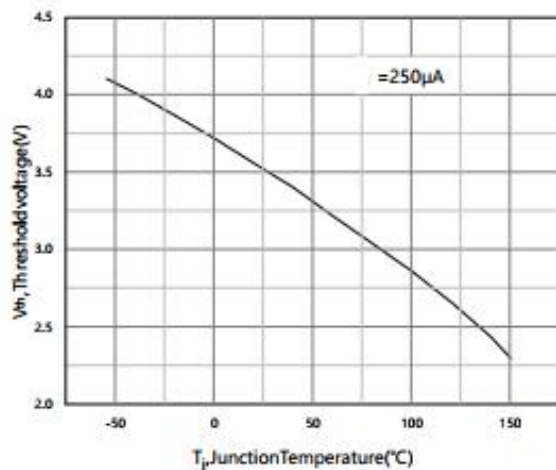


Figure 7. Threshold voltage

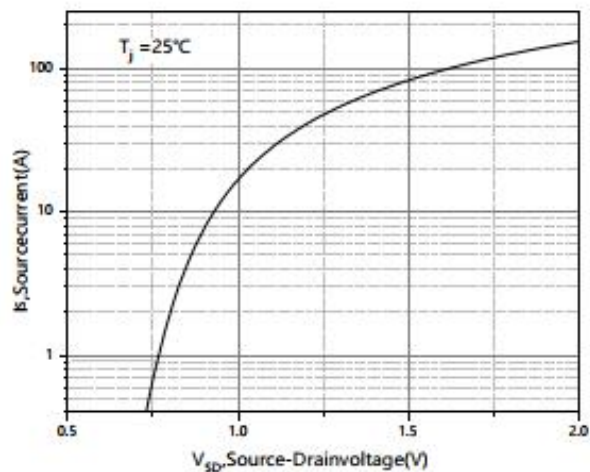


Figure 8. Forward characteristic of body diode

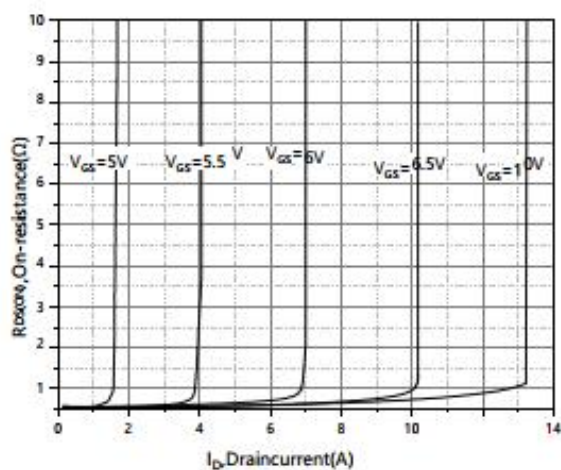


Figure 9. Drain-source on-state resistance

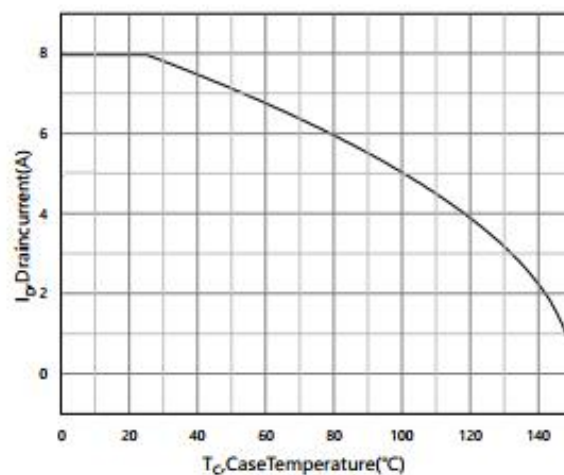


Figure 10. Drain current

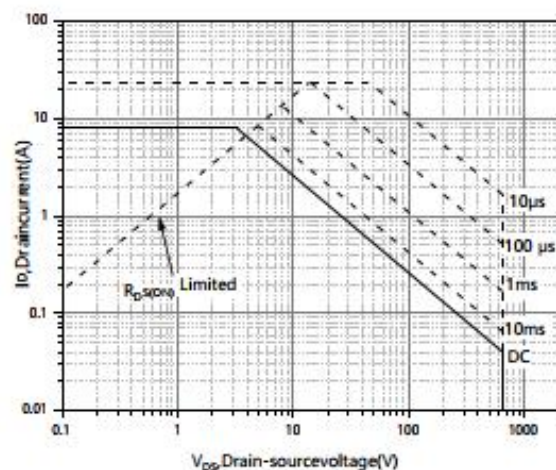
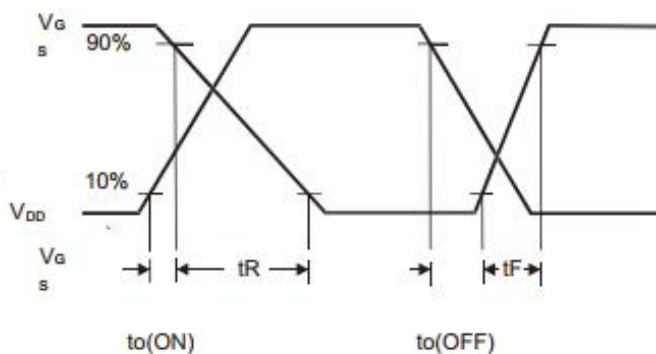
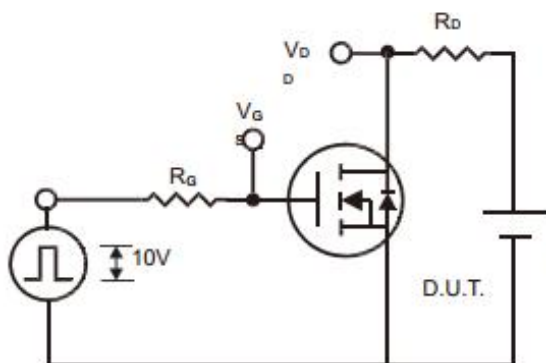
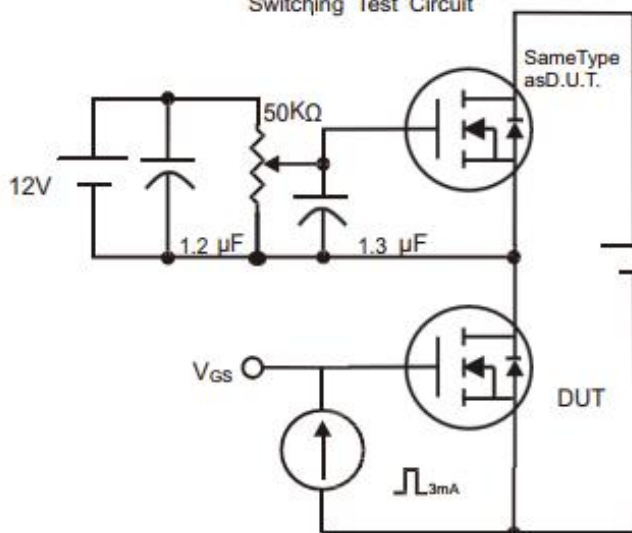


Figure 11. Safe operation area $T_c = 25^\circ\text{C}$

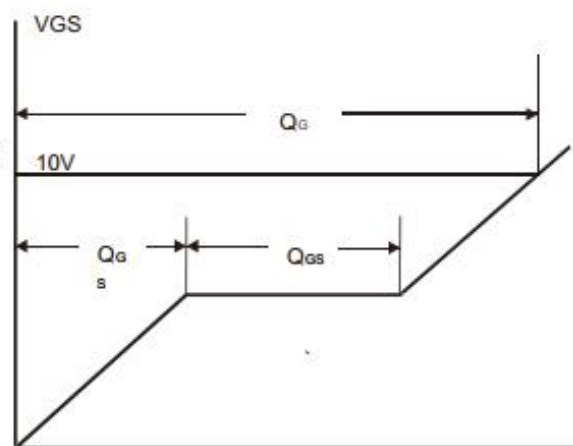
GateChargeTestCircuit&Waveform



Switching Test Circuit

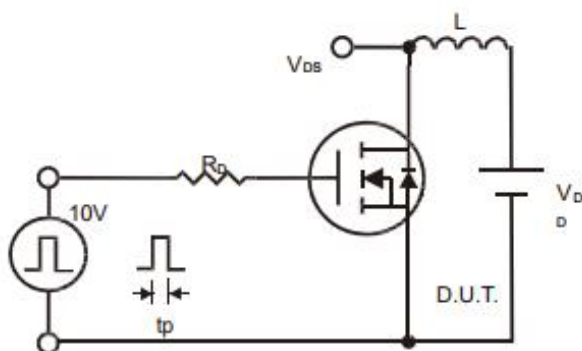


Switching Waveforms

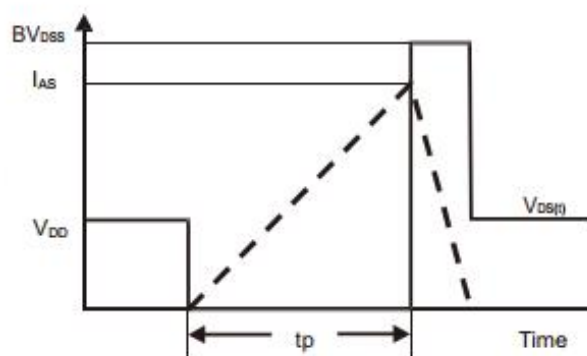


GateChargeTestCircuit

Gate Charge Waveform

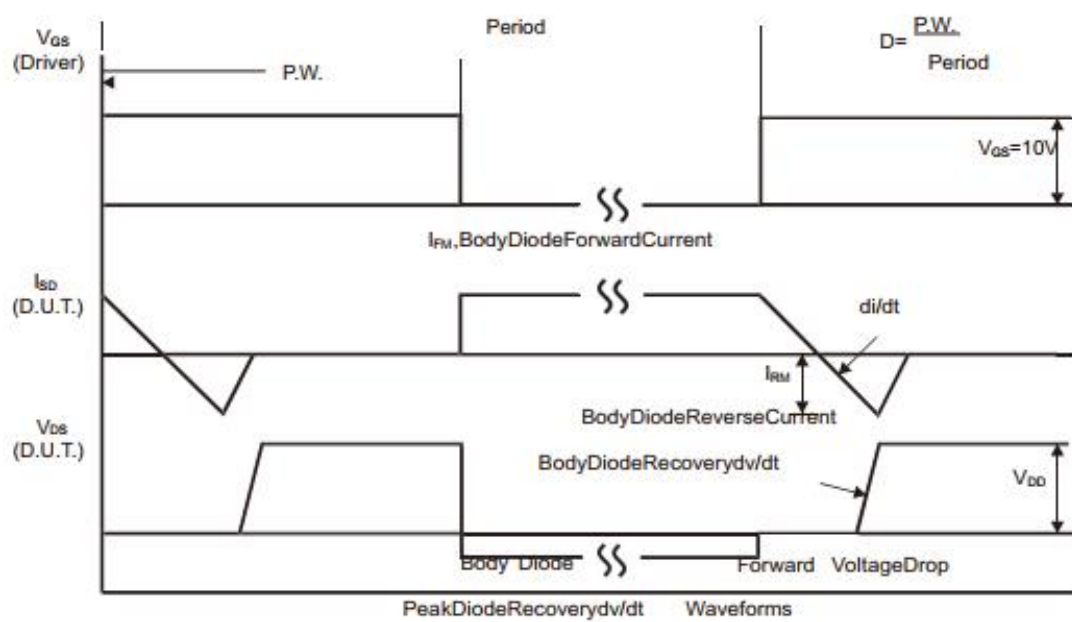
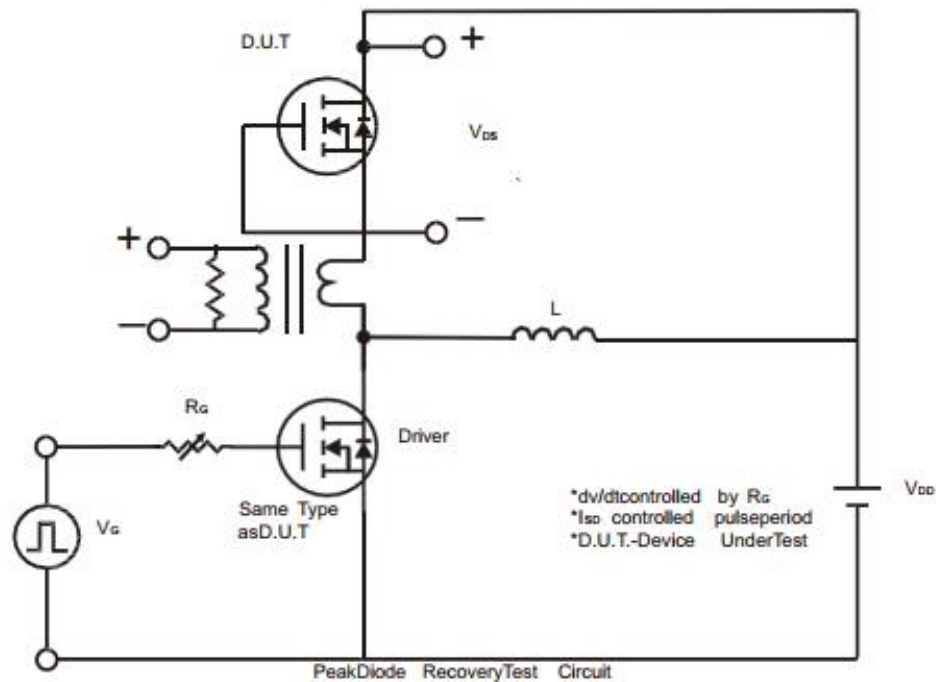


Unclamped Inductive Switching TestCircuit

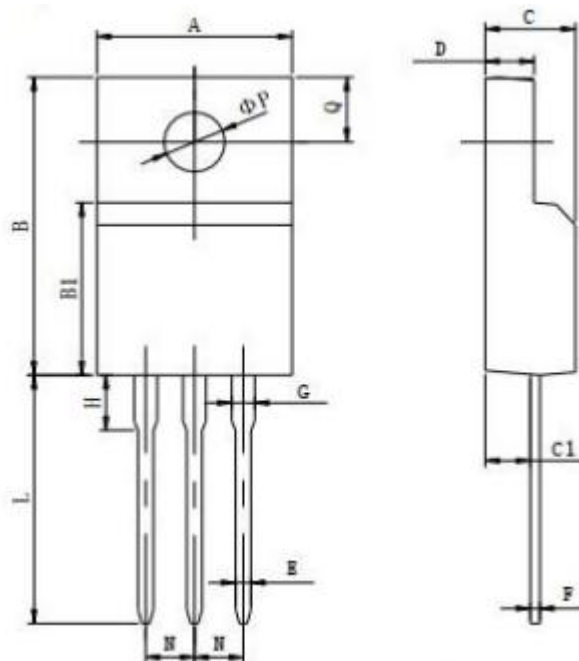


Unclamped Inductive Switching Waveforms

PeakDiodeRecoverydv/dtTestCircuit&Waveform



Package Description



Items	Values(mm)	
	MIN	MAX
A	9.60	10.4
B	15.4	16.2
B1	8.90	9.50
C	4.30	4.90
C1	2.10	3.00
D	2.40	3.00
E	0.60	1.00
F	0.30	0.60
G	1.12	1.42
H	3.40	3.80
	1.60	2.90
L	12.0	14.0
N	2.34	2.74
Q	3.15	3.55
ϕp	2.90	3.30

TO-220F Package



迈诺斯科技

MLS65R580P

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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