四川民承电子有限公司

MC-POWER SEMICONDUCTOR CO.,LTD

承 认 书

APPROVAL SHEET

客户名称 CUSTOMER	
地　　址 ADDRESS	
零件名称 PART NAME	
型　　号 MODEL	**MK090P100TL**

出厂确认：

拟　制 PRODUCED BY	审　核 CHECKED BY	批　准 APPROVED BY
郑 慧	漆 维	杨红伟

客户确认：

确　认 CONFIRM	审　核 CHECKED BY	批　准 APPROVED BY

MOSFETs Silicon 100V P-Channel MOS

■ Applications

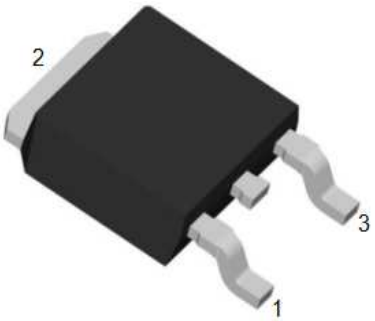
- Synchronus Rectification
- Industrial and Motor Drive
- DC/DC and AC/DC Converters
- Power Tools

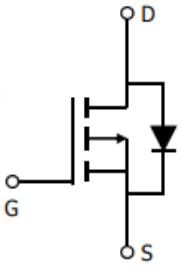
■ Features

- High-Speed Switching
- Low gate charge
- low reverse transmission capacitance
- Improved dv/dt capability
- RoHS and Halogen-Free Compliant
- 100% UIS and RG Tested

■ Product Summary

V_{DS}	-100	V
I_D	-20	A
$R_{DS(ON),Typ}$@10V	72	mΩ
$R_{DS(ON),Typ}$@4.5V	78	mΩ
Q_g	55	nC





Gate： 1

Drain： 2

Source： 3

TO-252

Marking	Package	Packaging	Min. package quantity
MK090P100TL	TO-252	Tape & Reel	3000

■ Absolute Maximum Ratings（Tc=25℃ unless otherwise noted)

Parameter			Symbol	Ratings	Unit
Drain-Source Voltage			V_{DS}	-100	V
Gate-Source Voltage			V_{GS}	±20	V
Continuous Drain Current	Tc=25℃	(Note 1)	I_D	-20	A
Continuous Drain Current	Tc=100℃	(Note 1)		-15	A
Drain Current-Pulsed		(Note 1)	I_{DM}	-80	A
Total Dissipation			P_D	96	W
Junction Temperature			T_j	150	℃
Storage Temperature			T_{stg}	-55-150	℃
Single Pulse Avalanche Energy		(Note 2)	E_{AS}	42	mJ

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

■ Thermal Characteristics

Parameter		Symbol	Max	Unit
Maximum Junction-to-Case		$R_{\theta JC}$	1.3	℃/W
Maximum Junction-to-Ambient	(Note 3)	$R_{\theta JA}$	60	℃/W

Note 1：Ensure that the channel temperature does not exceed 150℃.

Note 2：V_{DD}=-50V, T_{ch}= 25℃(initial), L=0.5mH, R_g=25Ω.

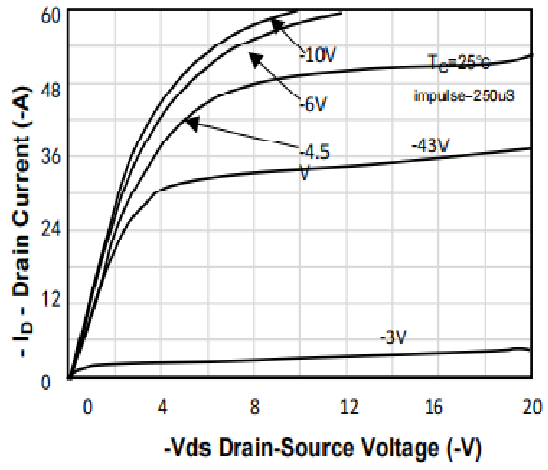
Note 3： The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25° C. The value in any given application depends on the user's specific board design.

Note：This transistor is sensitive to electrostatic discharge and should be handled with care.

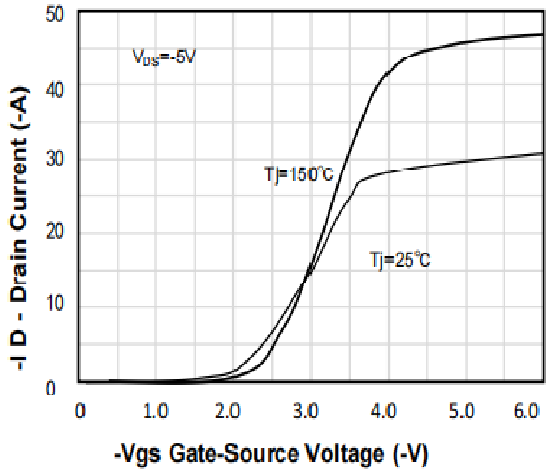
■ Electrical Characteristics（Tc=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250uA	-100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-100V,V_{GS}=0V	-	-	-1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS},I_D=-250uA	-1.5	-2	-2.5	V
Drain-Source On Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V,I_D=-10A	-	78	100	mΩ
		Tj=125℃	-	125	-	
		V_{GS}=-10V,I_D=-10A	-	72	90	
		Tj=125℃	-	122	-	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-50V,V_{GS}=0V, f=1.0MHz	-	2860	-	pF
Output Capacitance	C_{oss}		-	95	-	pF
Reverse Transfer Capacitance	C_{rss}		-	70	-	pF
Switching Paramters						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-50V,I_D=-10A, V_{GS}=-10V,R_G=2.7Ω	-	8	-	ns
Turn-On Rise Time	t_r		-	25	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	115	-	ns
Turn-Off Fall Time	t_f		-	77	-	ns
Total Gate Charge	Q_g	V_{DS}=-50V,I_D=-20A, V_{GS}=-10V	-	55	-	nC
Gate-Source Charge	Q_{gs}		-	12	-	nC
Gate-Drain Charge	Q_{gd}		-	10	-	nC
Source-Drain Characteristics						
Diode Forward Voltage	V_{sd}	V_{GS}=0V,I_S=-10A	-	-0.8	-1.3	V
Reverse Recovery Time	t_{rr}	V_R=-50V,I_F=-10A, di/dt=-100A/us	-	35	-	ns
Reverse Recovery Charge	Q_{rr}		-	40	-	nC

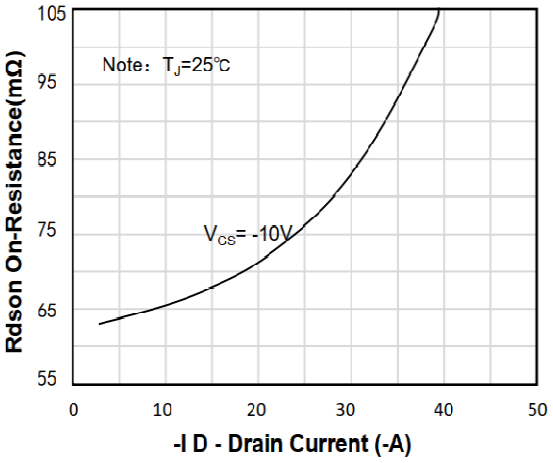
■ Characteristics Curves



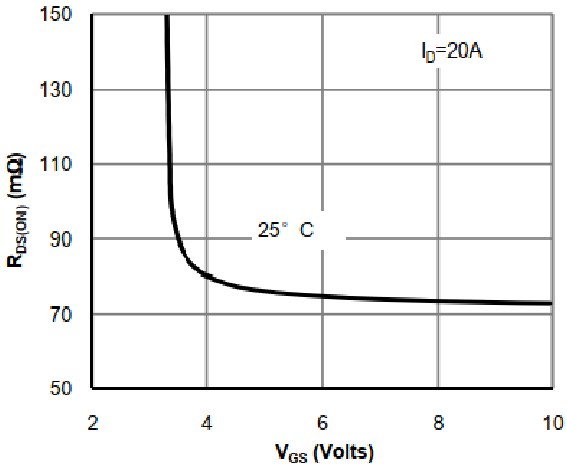
Output Characteritsics



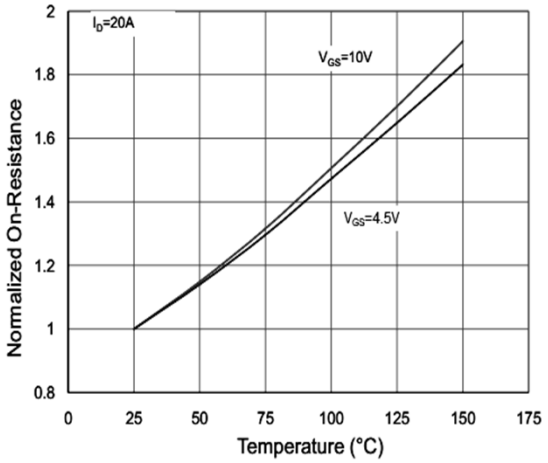
Transfer Characteritsics



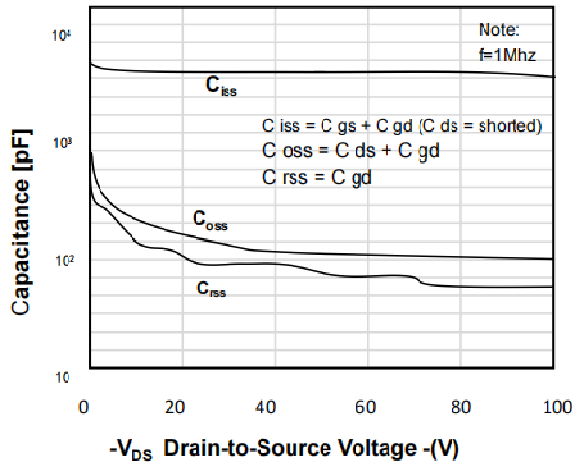
On Resistance Vs Drain Current



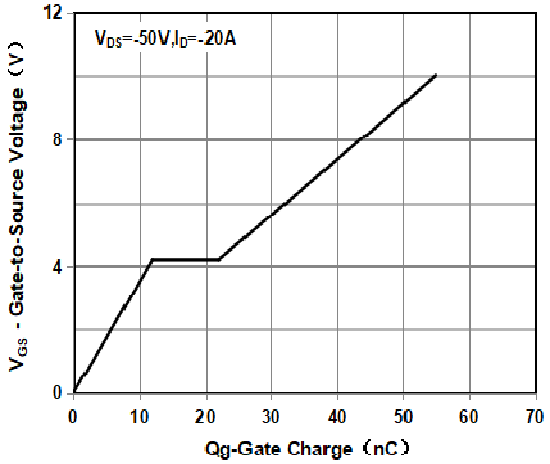
On Resistance Vs Gate Source Voltage



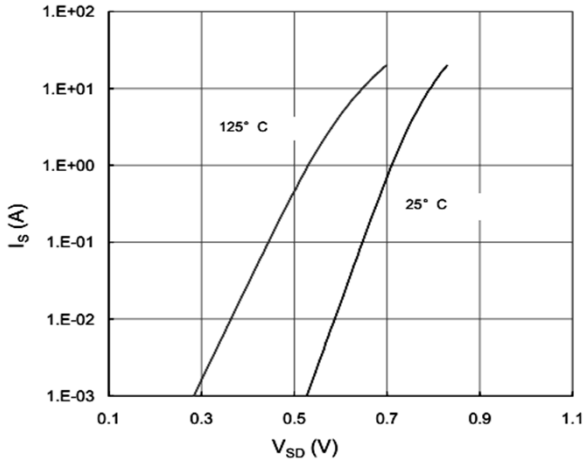
Rdson-JunctionTemperature



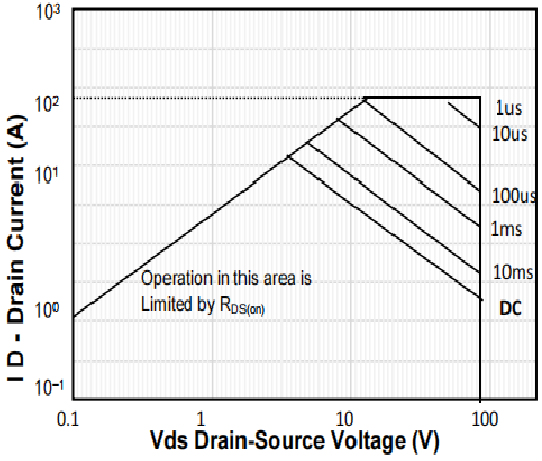
Capacitance



Gate Charge Waveform



Source-Drain Diode Forward Voltage

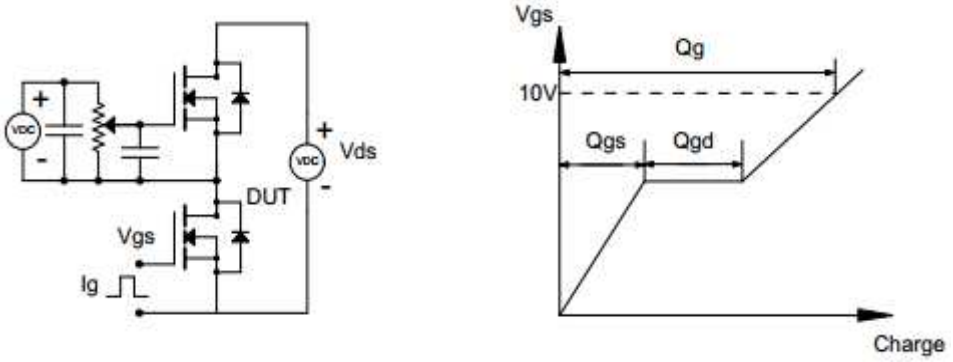


Maximum Safe Operating Area

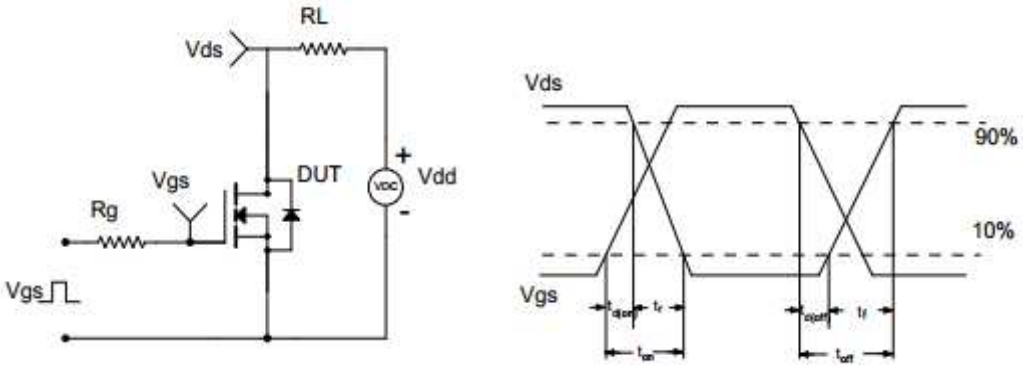
Note： The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

■ Test Circuit & Waveform

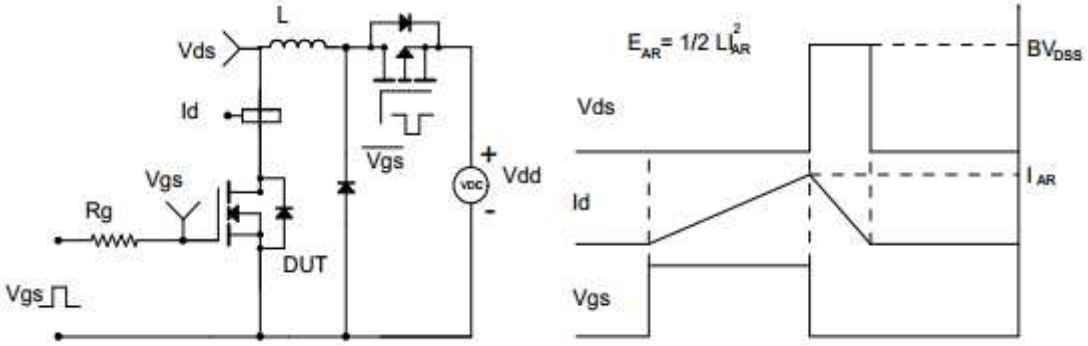
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveform



■ TO-252 Package Dimensions

Unit：mm

Symbol	Min	Nom	Max	Symbol	Min	Nom	Max
A	2.10		2.50	E	5.80		6.30
B	0.80		1.25	e1	2.25	2.30	2.35
b	0.50		0.85	e2	4.45		4.75
b1	0.50		0.90	L1	9.50		10.20
b2	0.45		0.60	L2	0.90		1.45
C	0.45		0.60	L3	0.60		1.10
D	6.35		6.75	K	-0.1		0.10
D1	5.10		5.50