

CS50N06

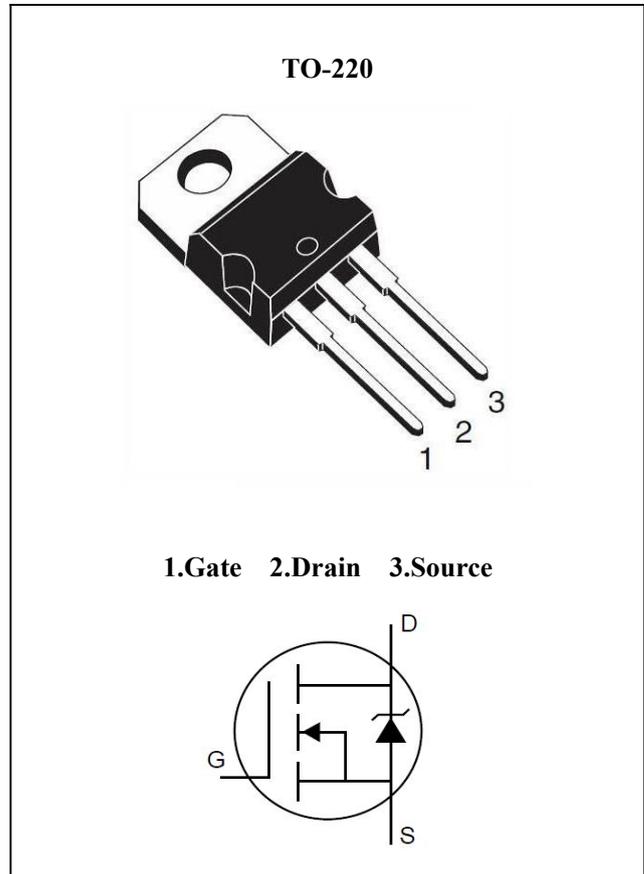
硅 N 沟道功率 MOSFET

Description

CS50N06 是 N 沟道功率 MOSFET。具有开关速度快，低门电荷，通态电阻低等特点。通常应用于高速开关电源、PWM 电机控制、直流转换器和桥电路等器件。

Features

- $V_{DSS} = 60V$
- $I_D = 50A$
- $R_{DS(ON)} < 10m\Omega (V_{GS}=10V)$





1、最大额定值

除非另有规定, $T_c = 25^\circ\text{C}$

Symbol	Parameter	Value	Unit
V_{DS}	漏源反向电压	60	V
V_{GS}	栅源电压	± 30	V
I_D	连续漏极电流	50	A
$I_{DM}①$	脉冲漏极电流	200	A
P_D	耗散功率	150	W
$dv/dt③$	峰值二极管恢复 dv/dt	12	V/ns
$E_{AS}②$	单脉冲雪崩能量	480	mJ
$E_{AR}①$	重复雪崩能量	12	mJ
$I_{AR}①$	雪崩电流	50	A
T_j	结温	150	$^\circ\text{C}$
T_{stg}	贮存温度	-55 ~ 150	$^\circ\text{C}$

注:

1. 脉冲宽度受 T_j 限制
2. $L=0.23\text{mH}$, $I_{AS}=50\text{A}$, $V_{DD}=25\text{V}$, $R_G=25\ \Omega$, $T_j = 25^\circ\text{C}$ 开始
3. $I_{SD}\leq 4.5\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, $T_j = 25^\circ\text{C}$ 开始

2、热阻

参数名称	符号		典型值	最大值	单位
结-壳热阻	$R_{\theta JC}$			1.25	$^\circ\text{C}/\text{W}$
结-环境热阻	$R_{\theta JA}$			62.5	

3、电参数

 除非另有规定，除非另有规定， $T_c = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
漏源击穿电压	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	600			V
漏源漏电流	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$			1	μA
栅源漏电流	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 100	nA
阈值电压	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0		4.0	V
通态电阻	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.5A$			2.2	m Ω
输入电容	C_{ISS}	$V_{DS} = 25V, V_{GS} = 0V$ $f = 1MHz$		515	670	pF
输出电容	C_{OSS}			55	72	
重复传输电容	C_{RSS}			6.5	8.5	
栅极电荷	Q_G	$V_{DS} = 480V$ $V_{GS} = 10V$ $I_D = 5A$ ①		15	19	nC
栅源电荷	Q_{GS}			2.5		nC
栅漏电荷	Q_{GD}			6.6		nC
启动延迟时间	$T_{d(on)}$	$V_{DD} = 300V$ $I_D = 5A$ $R_G = 25\Omega$ ①		10	30	ns
上升时间	T_r			42	90	
关闭延迟时间	$T_{d(off)}$			38	85	
下降时间	T_f			46	100	
连续漏源电流	I_{SD}				5	A
脉冲漏源电流	I_{SM}				20	A
二极管正向压降	V_{SD}	$T_J = 25^\circ C, I_{SD} = 5A, V_{GS} = 0V$			1.4	V
反向恢复时间	t_{RR}	$T_J = 25^\circ C, I_F = 5A, V_{GS} = 0V$ $di/dt = 100A/\mu s$ ①		300		ns
反向恢复电荷	Q_{RR}			2.2		μC

注：

 1. 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$



4、特性曲线

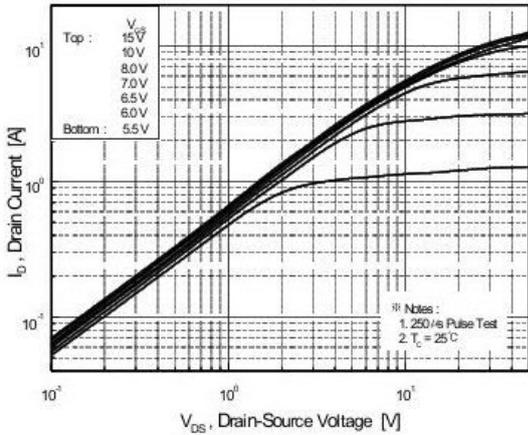


Figure 1. On-Region Characteristics

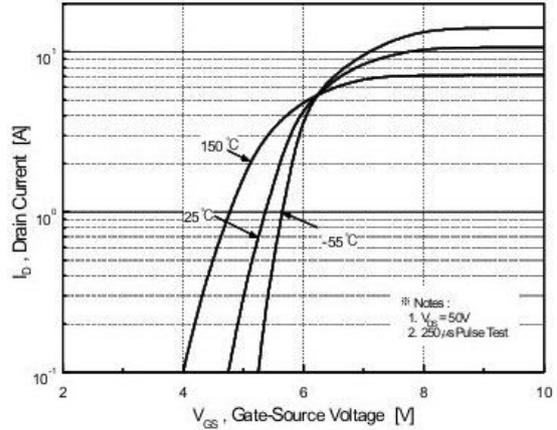


Figure 2. Transfer Characteristics

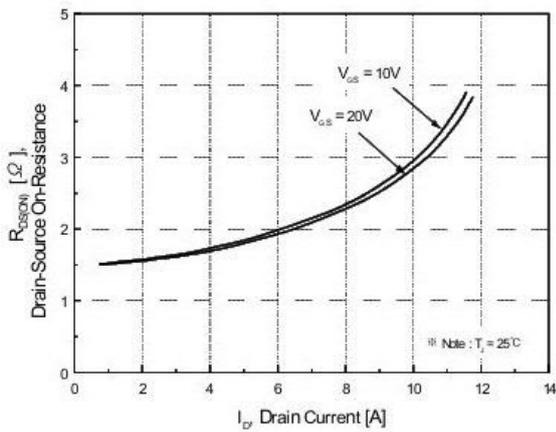


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

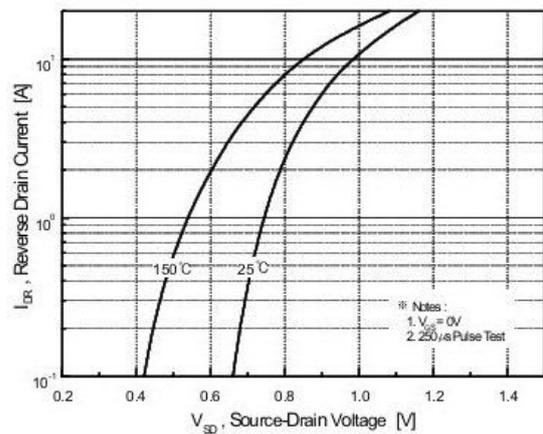


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

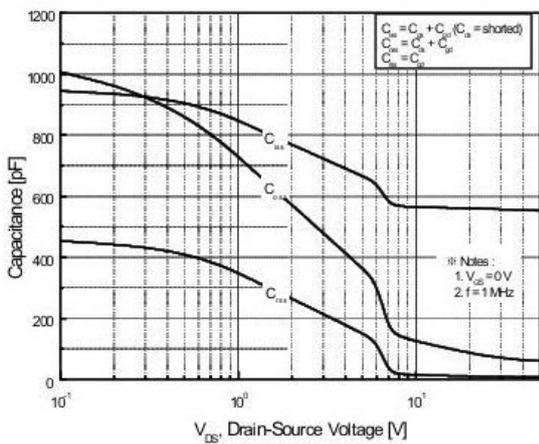


Figure 5. Capacitance Characteristics

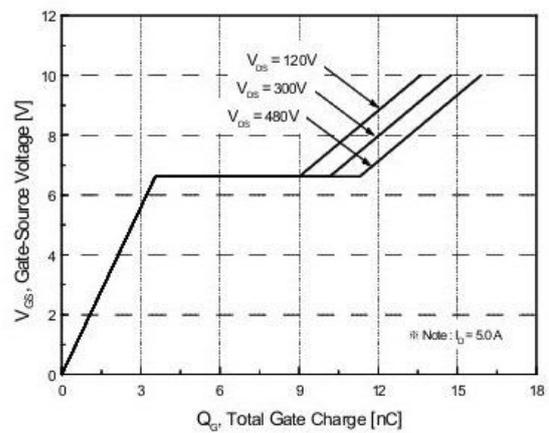


Figure 6. Gate Charge Characteristics

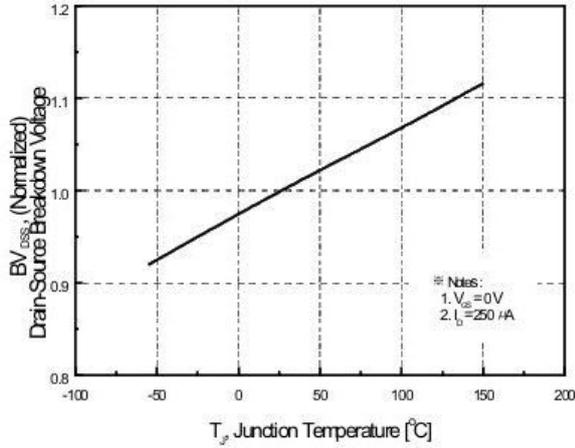


Figure 7. Breakdown Voltage Variation vs. Temperature

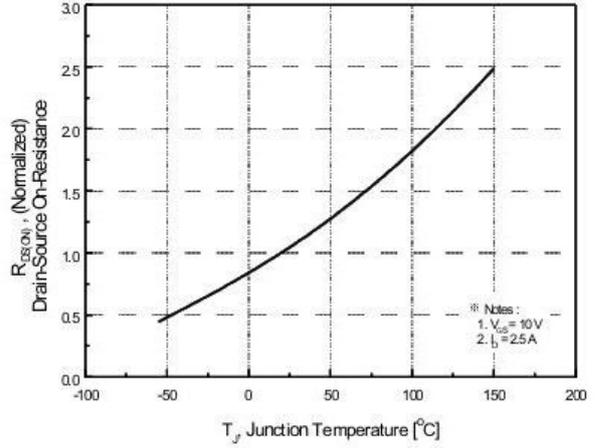


Figure 8. On-Resistance Variation vs. Temperature

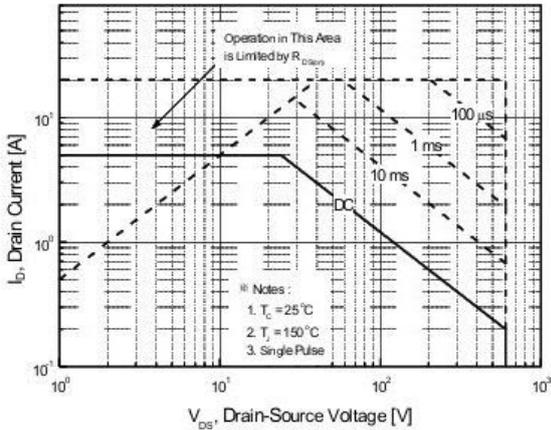


Figure 9. Maximum Safe Operating Area

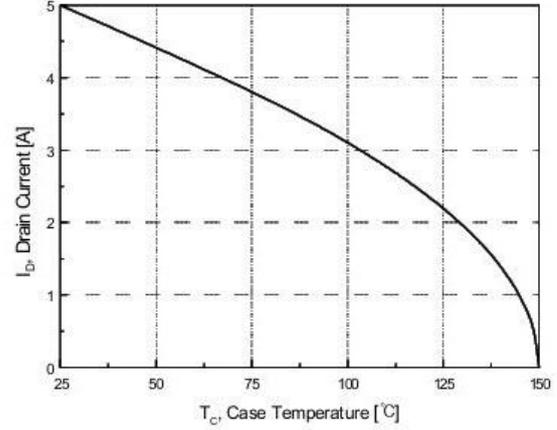


Figure 10. Maximum Drain Current vs. Case Temperature

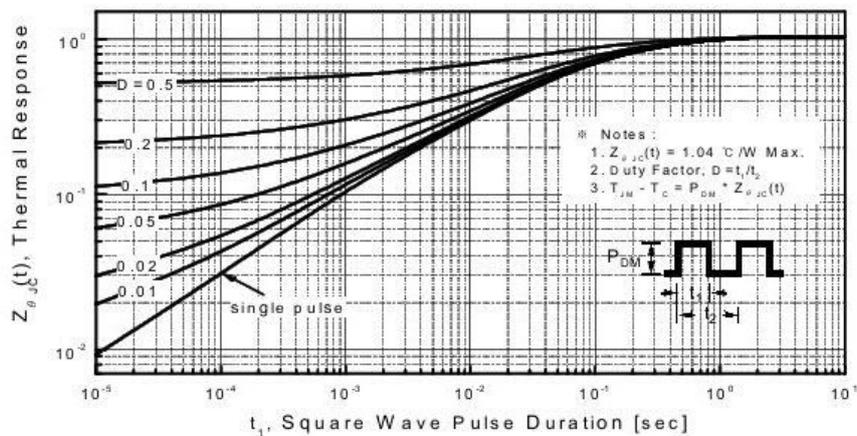
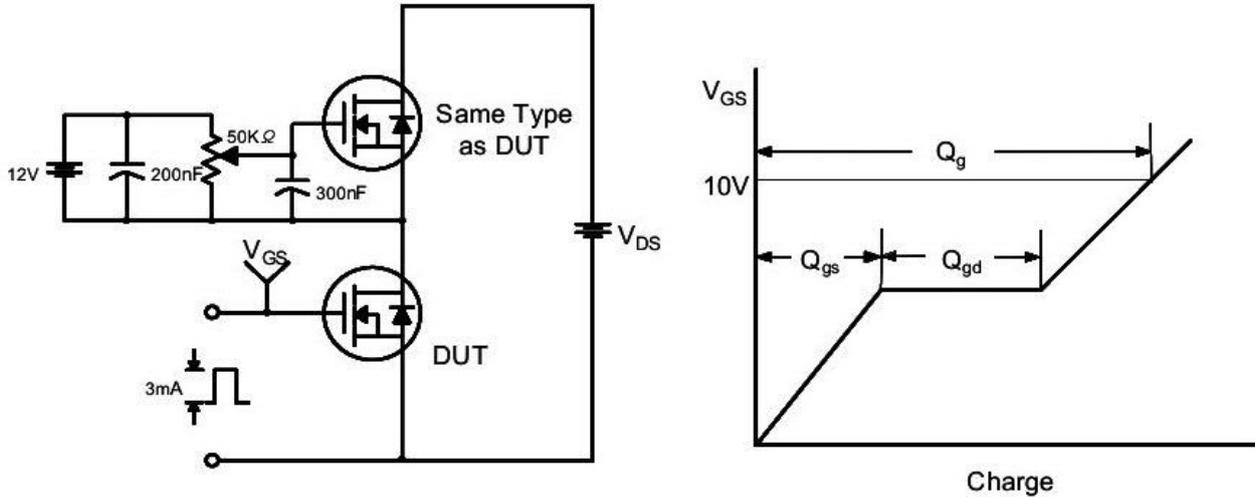


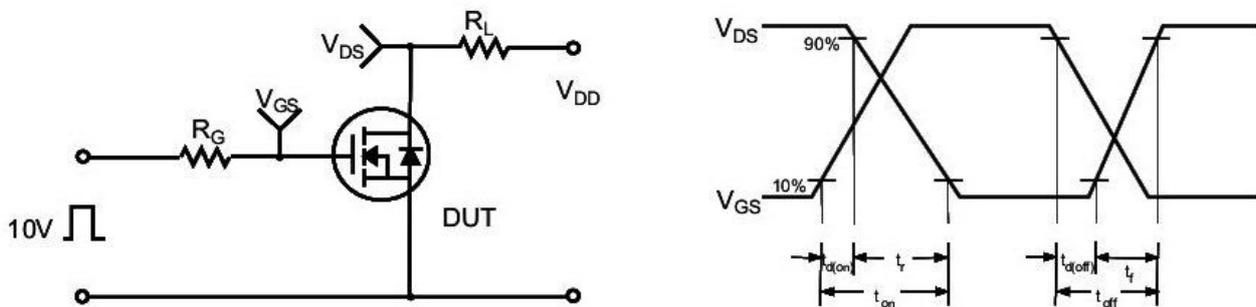
Figure 11. Transient Thermal Response Curve

5、测试电路

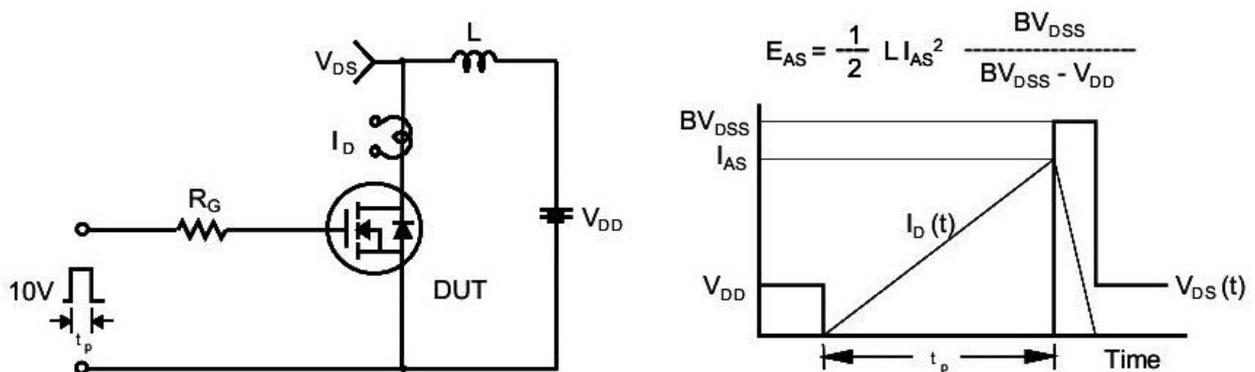
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

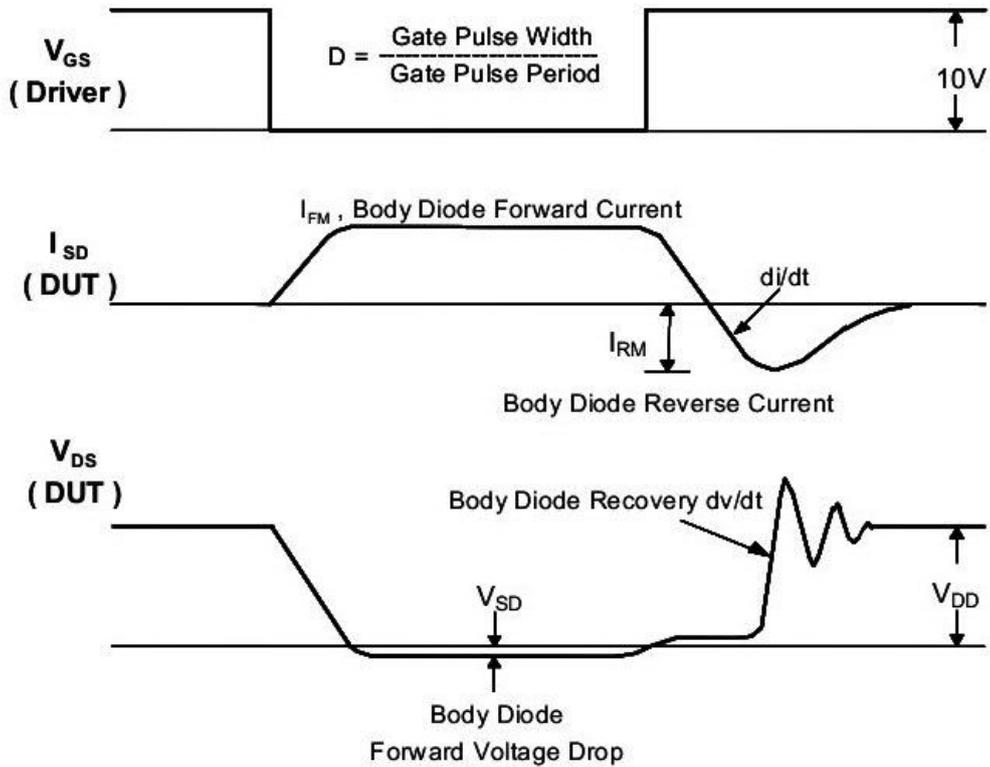
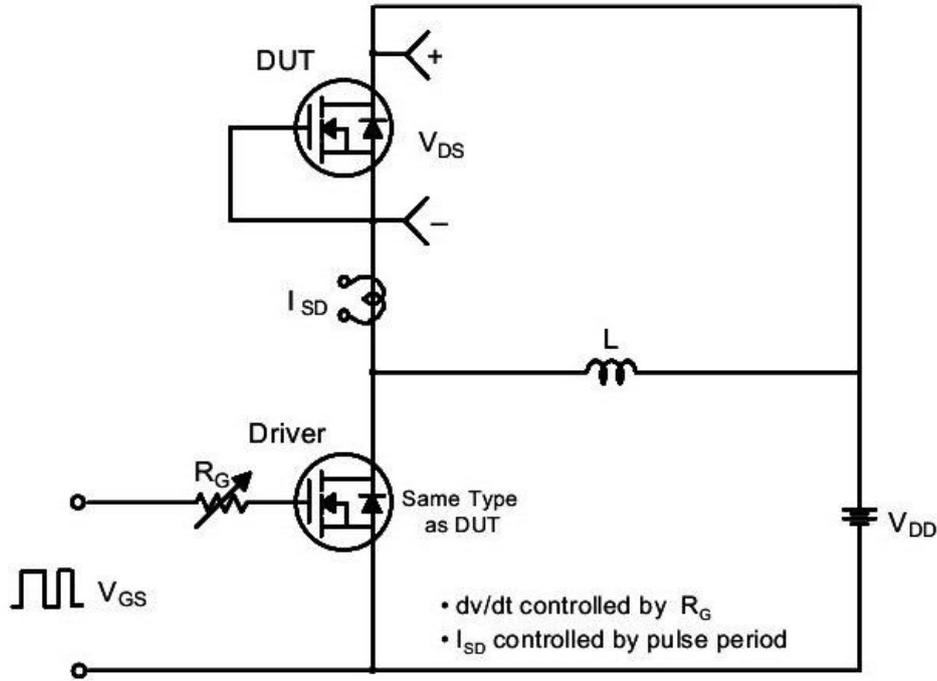


Unclamped Inductive Switching Test Circuit & Waveforms





Peak Diode Recovery dv/dt Test Circuit & Waveforms





6、机械数据

