

描述 / Descriptions

TO-252 塑封封装 P 沟道 MOS 场效应管。

P-CHANNEL MOSFET in a TO-252 Plastic Package.

特征 / Features

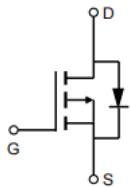
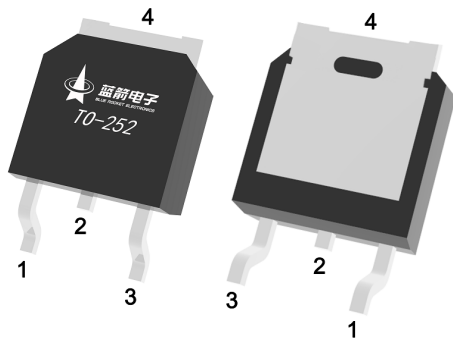
$R_{DS(on)}$ 小, 门电荷低, C_{rss} 小, 开关速度快, 无卤产品。

Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching, HF Product.

用途 / Applications

用于低压电路如: 汽车电路、DC/DC 转换、便携式产品的电源高效转换。

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1 : G

PIN 2 : D

PIN 3 : S

PIN 4 : D

印章代码 / Marking

见印章说明。

See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Ta=25°C)

参数 Parameter		符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage		V_{DS}	-60	V
Drain Current		$I_D(T_c=25^{\circ}\text{C})$	-50	A
Drain Current - Pulsed		I_{DM}	-200	A
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation		$P_D(T_c=25^{\circ}\text{C})$	85	W
Single Pulsed Avalanche Energy		E_{AS}	250	mJ
Avalanche Current(L=0.5mH)		I_{AS}	25	A
Junction and Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^{\circ}\text{C}$
Thermal resistance, junction - ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	25	$^{\circ}\text{C/W}$
	Steady-State		50	
Thermal resistance, junction - case	Steady-State	$R_{\theta JC}$	1.5	

电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions		最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$	$I_D=-250\mu\text{A}$	-60	-68		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60\text{V}$	$V_{GS}=0\text{V}$			-1.0	μA
		$V_{DS}=-48\text{V}$	$T_C=150^{\circ}\text{C}$			-10	
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20\text{V}$	$V_{DS}=0\text{V}$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$	$I_D=-250\mu\text{A}$	-1	-1.6	-3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10\text{V}$	$I_D=-20\text{A}$		30	35	$\text{m}\Omega$
	$R_{DS(on)}$	$V_{GS}=-4.5\text{V}$	$I_D=-10\text{A}$		40	45	$\text{m}\Omega$
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$	$I_S=-1\text{A}$			-1.2	V
Gate resistance	R_g				10		Ω
Input Capacitance	C_{iss}	$V_{DS}=-25\text{V}$ $f=1.0\text{MHz}$	$V_{GS}=0\text{V}$		3200		pF
Output Capacitance	C_{oss}				800		pF
Reverse Transfer Capacitance	C_{rss}				270		pF
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=-10\text{V},$ $I_D=-20\text{A}$	$V_{DS}=-30\text{V},$		45		nC
Total Gate Charge	$Q_{g(4.5V)}$				23		
Gate Source Charge	Q_{gs}				9.3		
Gate Drain Charge	Q_{gd}				10.2		

电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-On Delay Time	t _{d(on)}	V _{GS} =-10V V _{DS} =-30V R _L =1.5 R _{GEN} =3 Ω		12		ns
Turn-On Rise Time	t _r			14.5		
Turn-Off Delay Time	t _{d(off)}			38		
Turn-Off Fall Time	t _f			15		

电参数曲线图 / Electrical Characteristic Curve

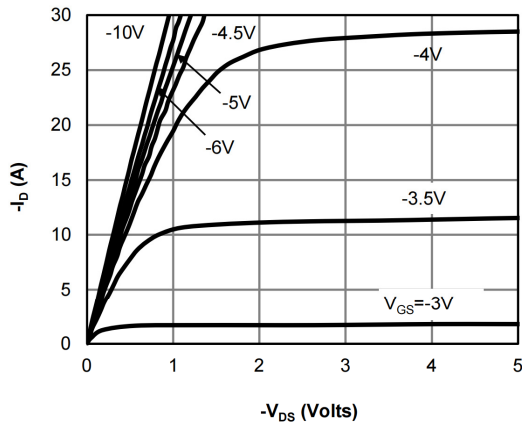


Figure 1: On-Region Characteristics

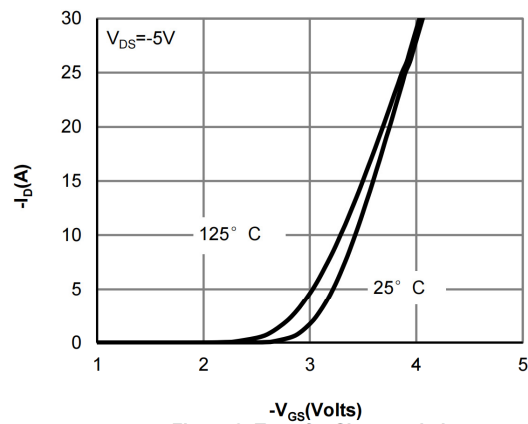


Figure 2: Transfer Characteristics

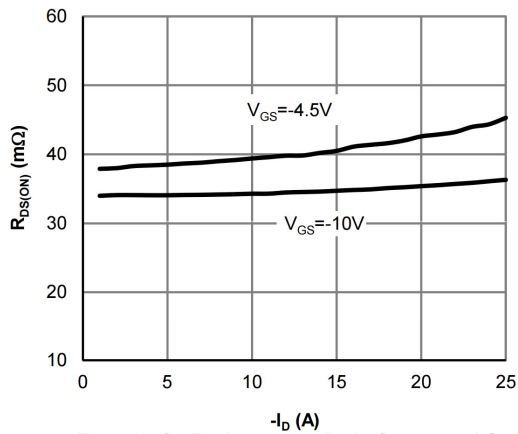


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

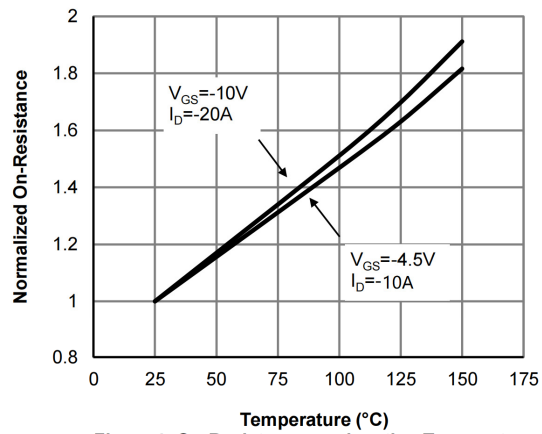


Figure 4: On-Resistance vs. Junction Temperature

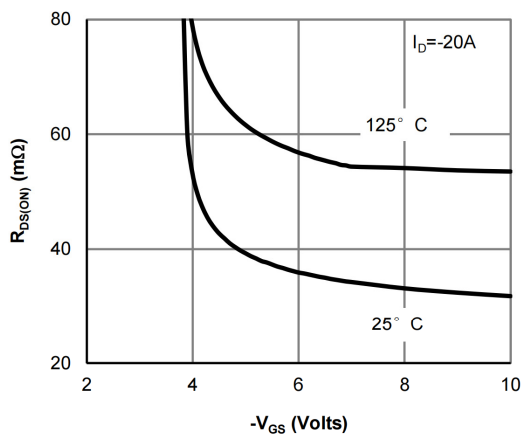


Figure 5: On-Resistance vs. Gate-Source Voltage

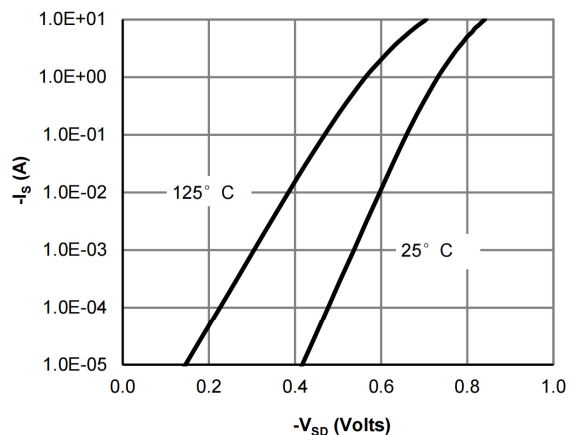


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

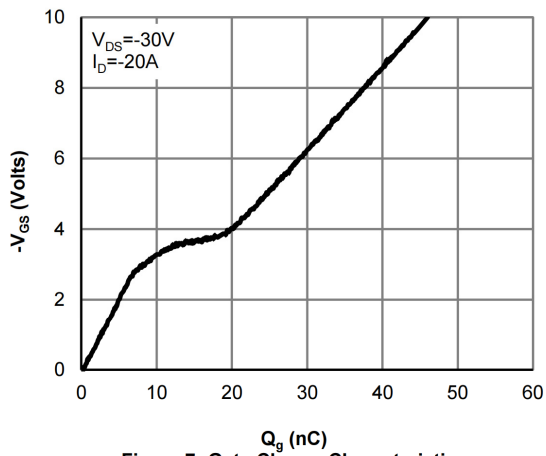


Figure 7: Gate-Charge Characteristics

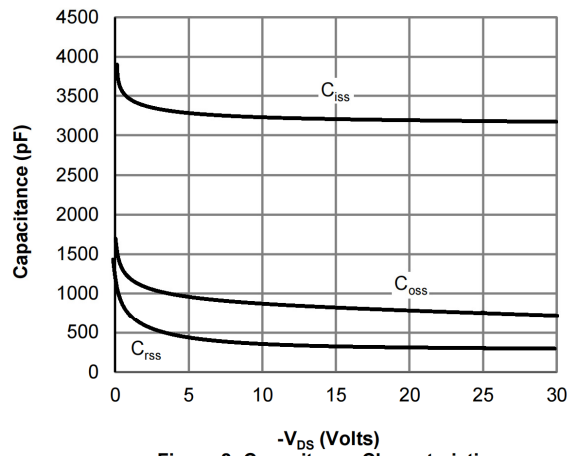


Figure 8: Capacitance Characteristics

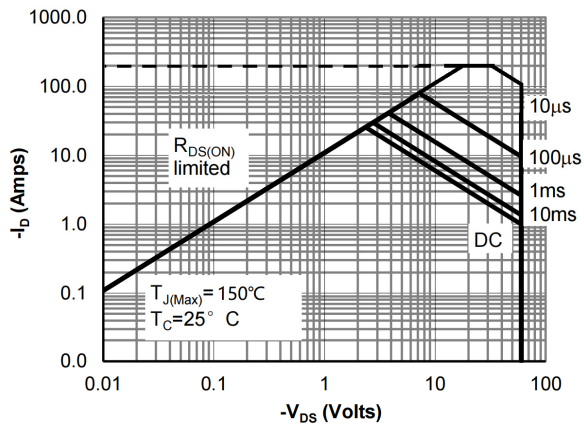


Figure 9: Maximum Forward Biased Safe Operating Area

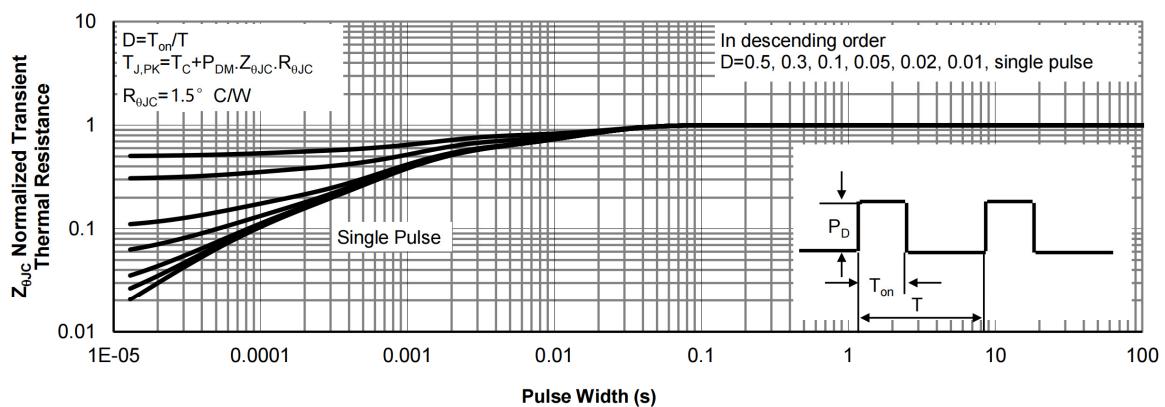
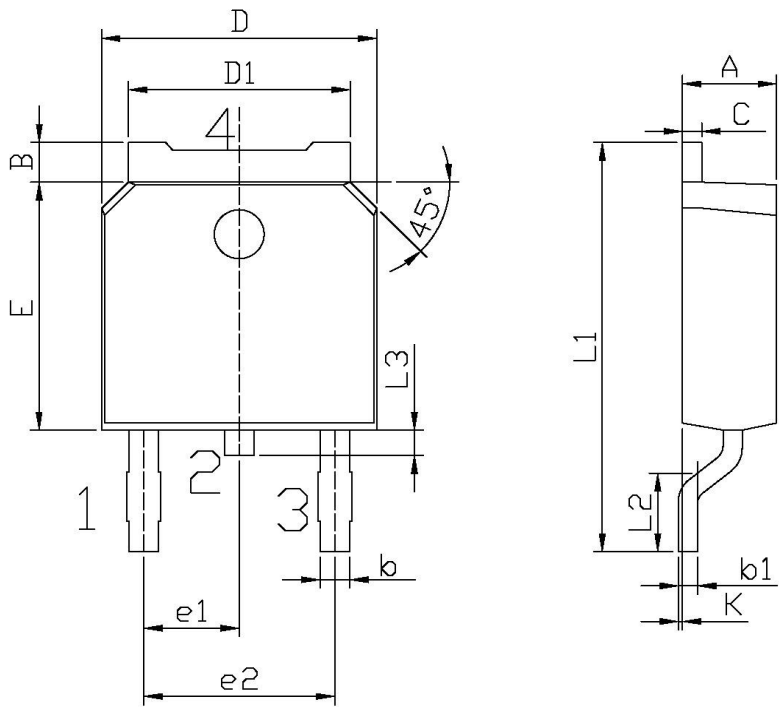


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

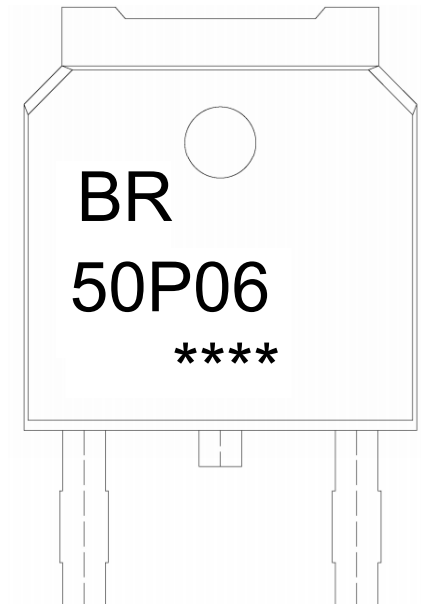


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

T0-252

印章说明 / Marking Instructions



说明：

BR： 为公司代码

50P06： 为型号代码

****： 为生产批号代码，随生产批号变化

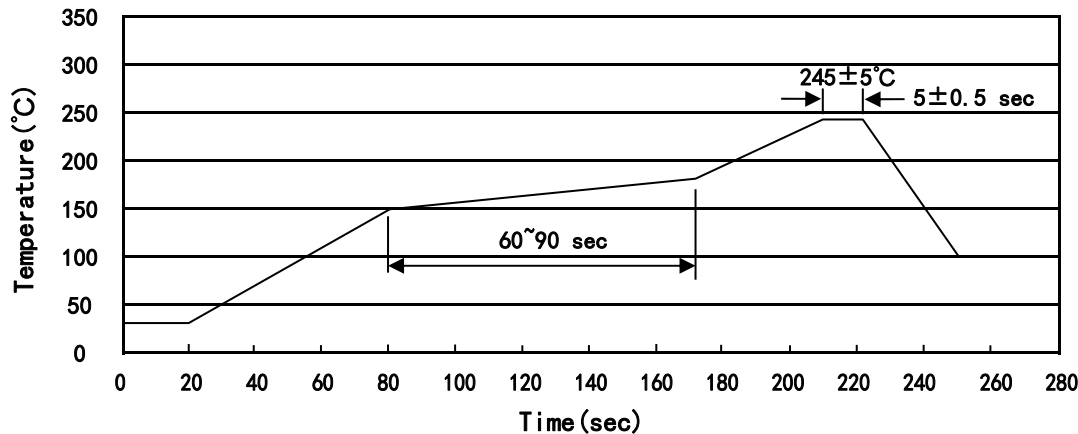
Note:

BR: Company Code

50P06: Product Type Code

****: Lot No. Code, code change with Lot No.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 150~180°C，时间 60~90sec；
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec；
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C 时间：10±1 sec. Temp.:260±5°C Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

使用说明 / Notices