

### 描述 / Descriptions

TO-252 塑封封装 N 沟道 MOS 场效应管。N-CHANNEL MOSFET in a TO-252 Plastic Package.

### 特征 / Features

低栅电荷,低反馈电容,开关速度快。

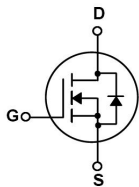
Low gate charge, low crss, fast switching.

### 用途 / Applications

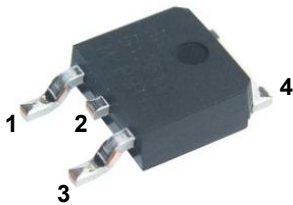
用于高功率 DC/DC 转换和功率开关。

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN1 : G

PIN 2 : D

PIN 3 : S

PIN 4 : D

### 放大及印章代码 / $h_{FE}$ Classifications & 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	$V_{DSS}$	200	V
Drain Current	$I_{D(Tc=25^{\circ}C)}$	9	A
	$I_{D(Tc=100^{\circ}C)}$	5.7	A
Drain Current - Pulsed	$I_{DM}$	36	A
Gate-Source Voltage	$V_{GSS}$	±30	V
Avalanche Energy Single Pulse	$I_{AR}$	9	A
Single Pulsed Avalanche Energy	$E_{AS}$	160	mJ
Avalanche Energy Repetitive	$E_{AR}$	4.6	mJ
Peak Diode Recovery dv/dt	dv/dt	5.5	V/ns
Total Power Dissipation	$P_{D(TA=25^{\circ}C)}$	2.5	W
	$P_{D(TC=25^{\circ}C)}$	46	W
Thermal Resistance, Junction-to-Case	$R_{QJC}$	2.7	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{QJA}$	110	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	°C

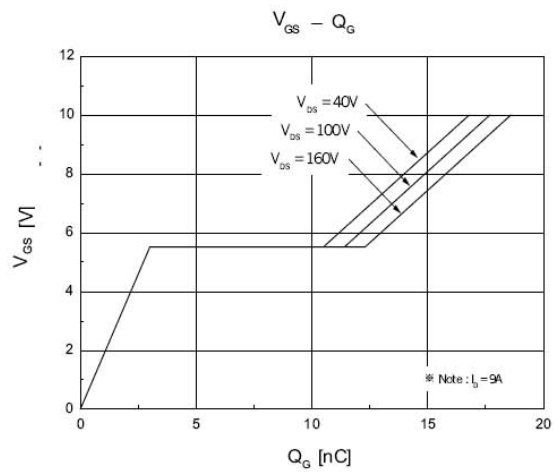
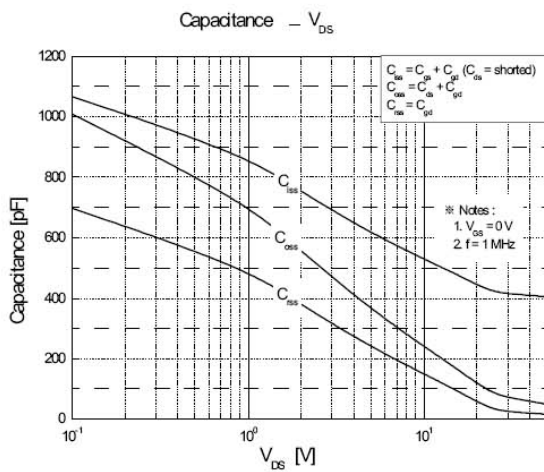
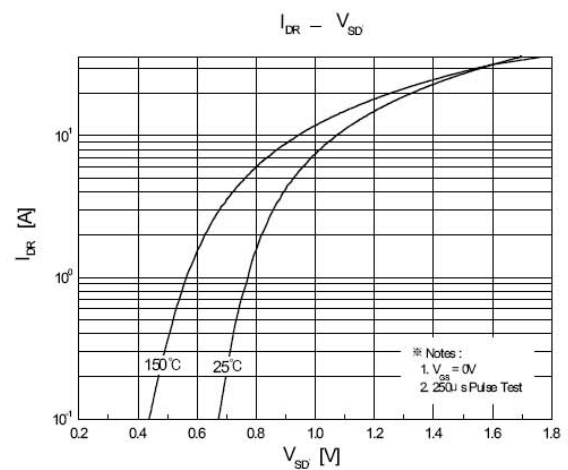
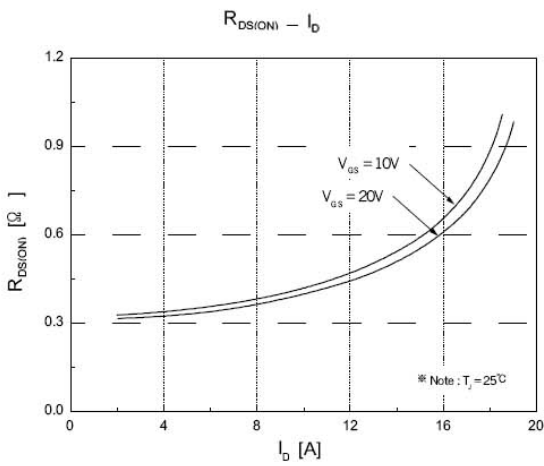
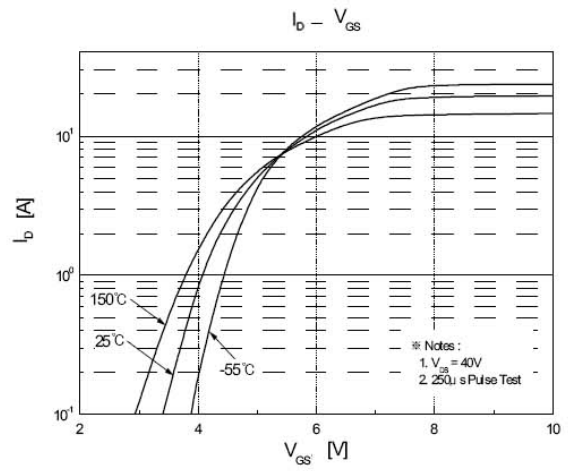
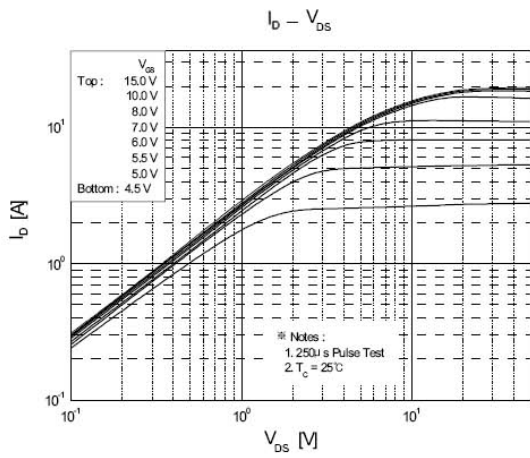
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	200			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DS} / \Delta T_J$	$I_D=250\mu A$		0.2		V/°C
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=200V$ $V_{GS}=0V$			1	μA
		$V_{DS}=160V$ $T_C=125^{\circ}C$			10	μA
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 25V$ $V_{DS}=0V$			±0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2		4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=4.5A$		0.34	0.4	Ω
Forward Transconductance	$g_{FS}$	$V_{DS}=40V$ $I_D=4.5A$		4.2		S
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		420	550	pF
Output Capacitance	$C_{oss}$			85	110	
Reverse Transfer Capacitance	$C_{rss}$			35	45	

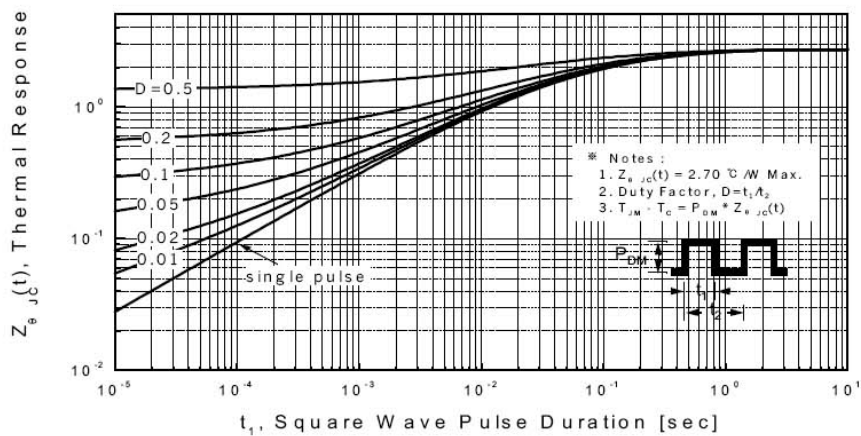
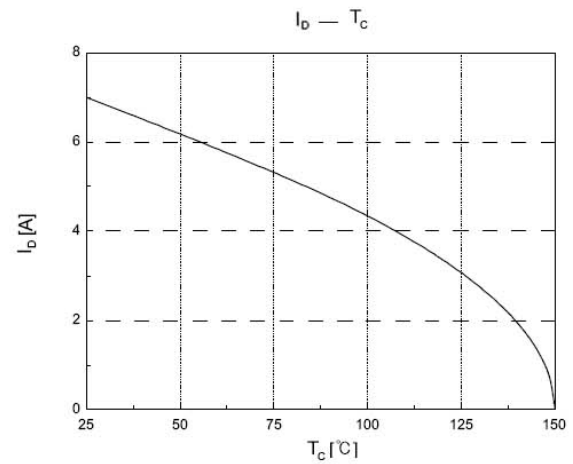
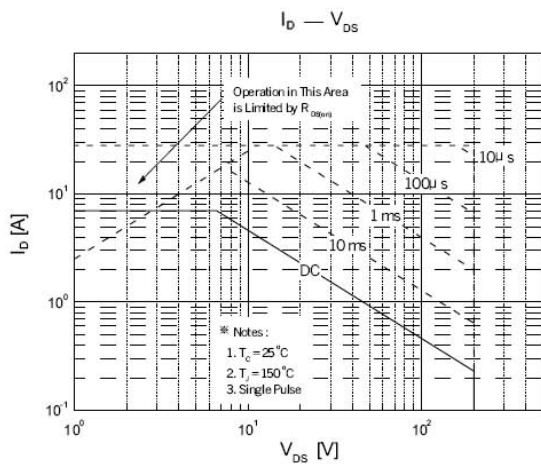
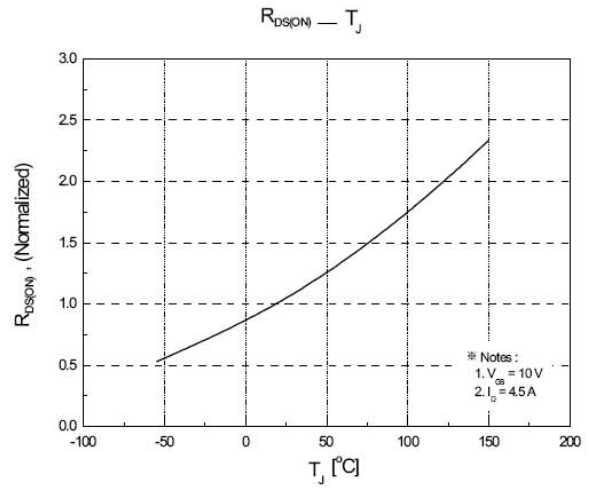
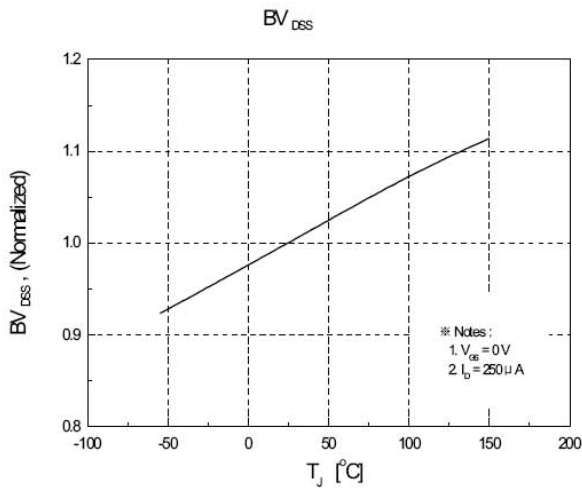
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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	$t_{d(on)}$	$V_{DD}=100V$ $I_D=9A$ $R_G=25\Omega$		8	30	ns
Turn-On Rise Time	$t_r$			75	160	
Turn-Off Delay Time	$t_{d(off)}$			47	110	
Turn-Off Fall Time	$t_f$			64	140	
Total Gate Charge	$Q_g$	$V_{DS}=160V$ $I_D=9A$ $V_{GS}=10V$		19	25	nC
Gate-Source Charge	$Q_{gs}$			3		nC
Gate-Drain Charge	$Q_{gd}$			9.5		nC
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				7	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				28	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=9A$			1.5	V
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V$ $I_S=9A$ $dI_F/dt=100A/\mu s$		150		ns
Reverse Recovery Charge	$Q_{rr}$			0.68		$\mu C$

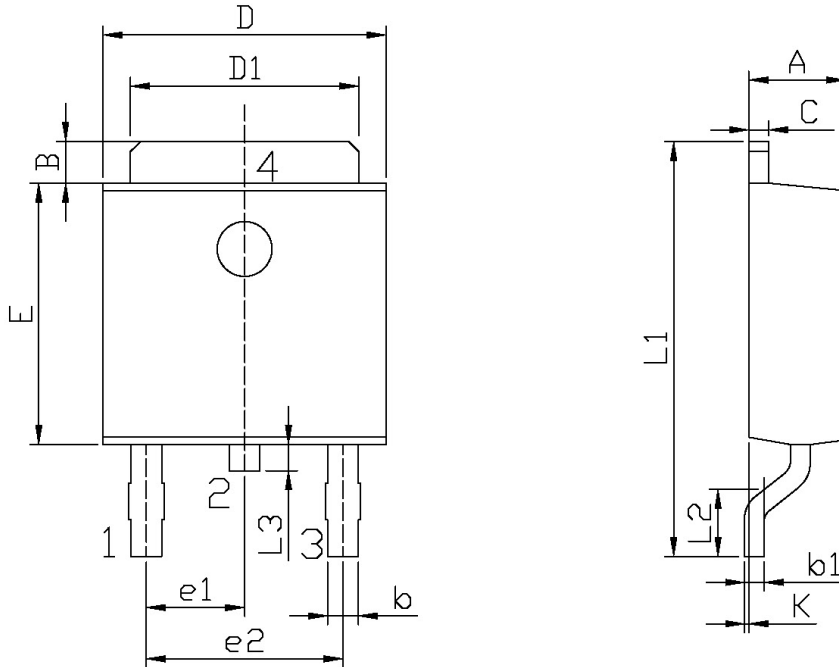
**电参数曲线图 / Electrical Characteristic Curve**



**电参数曲线图 / Electrical Characteristic Curve**



**外形尺寸图 / Package Dimensions**

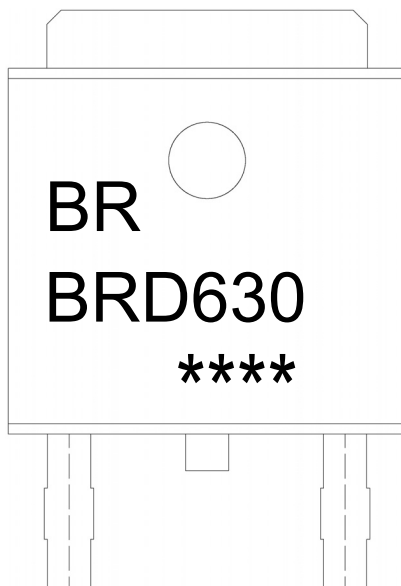


单位: mm

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	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
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

BRD630： 为产品型号

\*\*\*\*： 为生产批号代码，随生产批号变化。

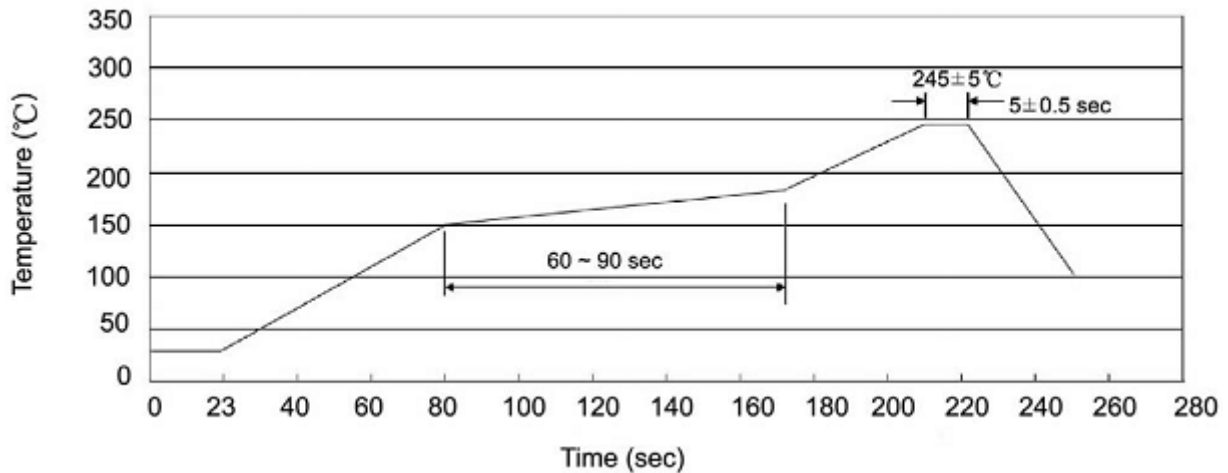
Note:

BR: Company Code.

BRD630: Product Type.

\*\*\*\*: 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 25~150°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:25~150°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 <sup>3</sup> )		
	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	5	25,000	13" × 16	360×360×50	385×257×392

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	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**