

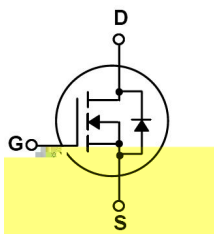
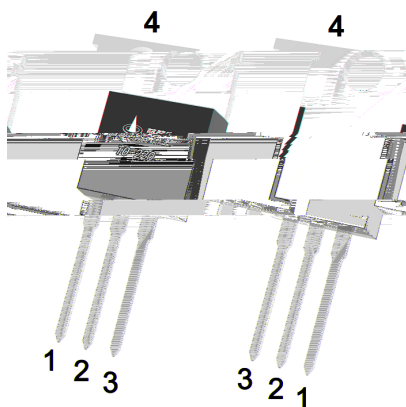
/ Descriptions

TO-220 N

N-CHANNEL MOSFET in a TO-220 Plastic Package.

/ Features**/ Applications**

High frequency switching and synchronous rectification, BMS, Motor.

/ Equivalent Circuit**/ Pinning**

PIN1 G

PIN 2 4 D

PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Drain Current		$I_D(T_c=25^\circ\text{C})$	180	A
Pulsed Drain Current		I_{DM}	385	A
Gate-Source Voltage		V_{GS}	20	V
Single Pulsed Avalanche Energy($L=0.5\text{mH}$)		E_{AS}	563	mJ
Avalanche Current		I_{AS}	37.5	A
Total Power Dissipation		$P_D(T_c=25^\circ\text{C})$	237	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	17.7	/W
	Steady-State		70.7	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	0.53	

/ Electrical Characteristics($T_a=25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	100	112		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	2	2.9	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=20\text{A}$		3.5	4.0	$\text{m}\Omega$
Forward On Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=1\text{A}$			1.2	V
Gate resistance	R_g	$f=1\text{MHz}$		1.7		Ω
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$		5550		pF
Output Capacitance	C_{oss}			2050		
Reverse Transfer Capacitance	C_{rss}			180		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10\text{V}$, $I_D=20\text{A}$ $V_{DS}=50\text{V}$		80		nC
Gate Source Charge	Q_{gs}			23		
Gate Drain Charge	Q_{gd}			17		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=50V$ $R_L=2.5\Omega$ $R_{GEN}=3\Omega$		25		ns
Turn-On Rise Time	t_r			17		
Turn-Off Delay Time	$t_{d(off)}$			53		
Turn-Off Fall Time	t_f			24		

/ Electrical Characteristic Curve

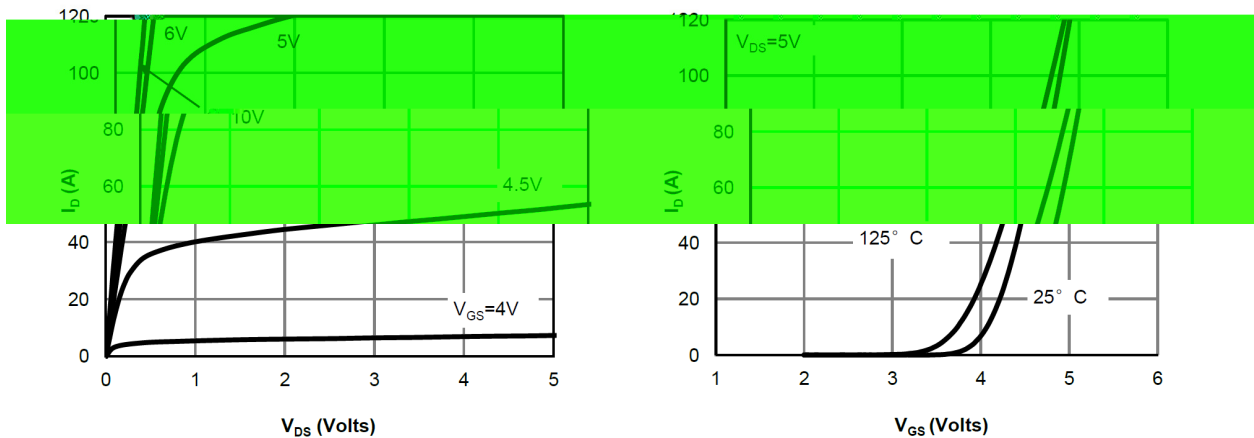


Figure 1: On-Region Characteristics

Figure 2: Transfer Characteristics

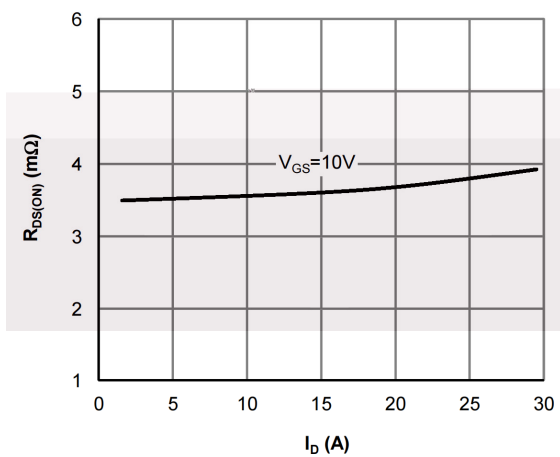


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

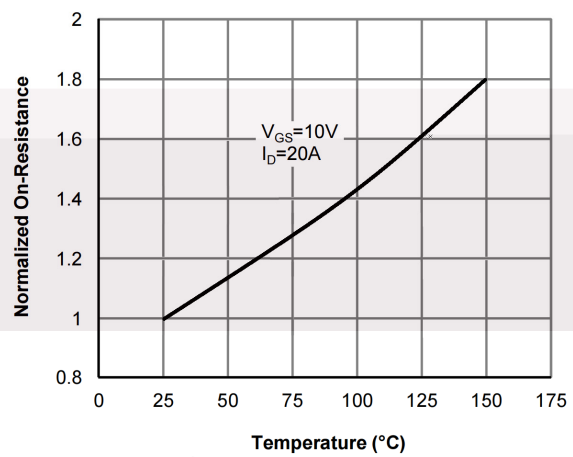


Figure 4: On-Resistance vs. Junction Temperature

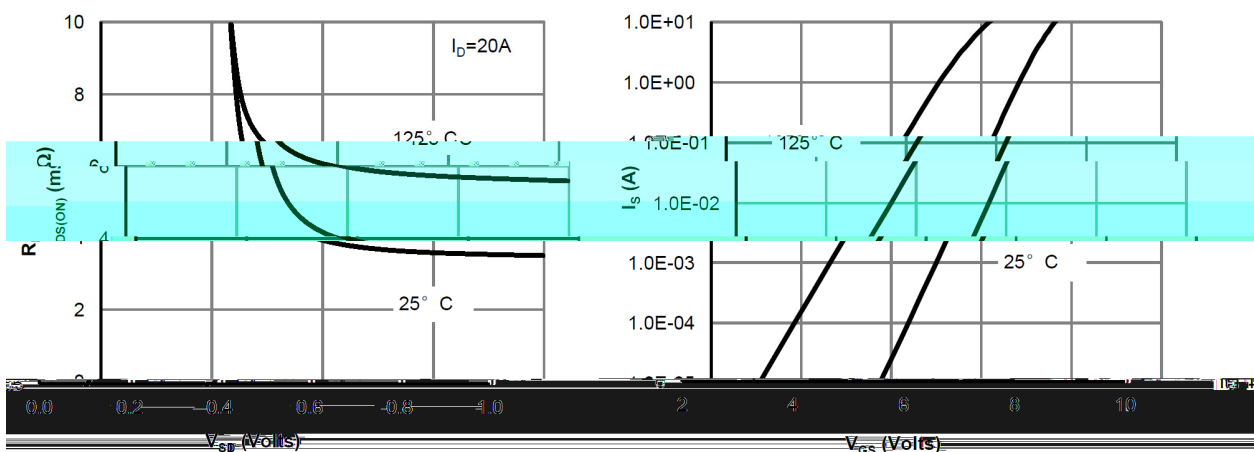


Figure 6: Body-Diode Characteristics

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

Electrical Characteristic Curve

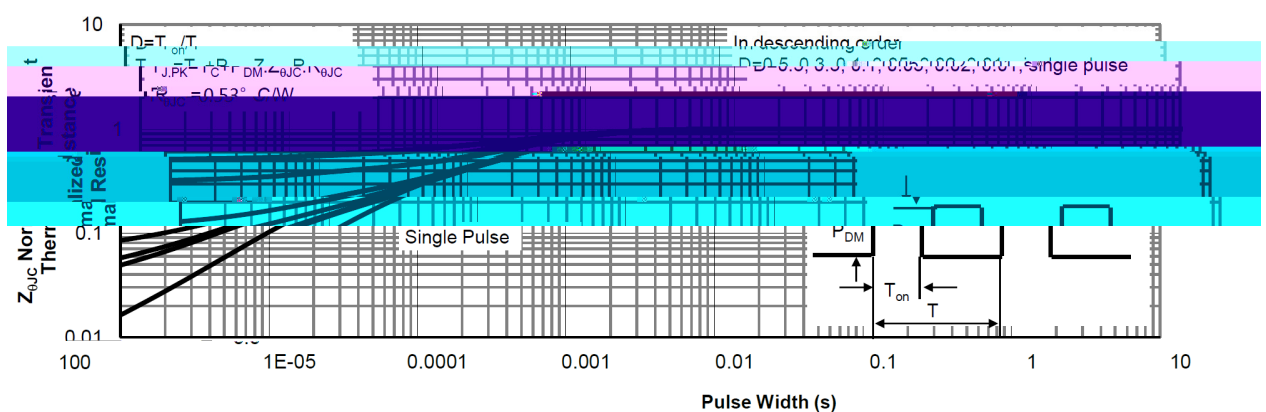
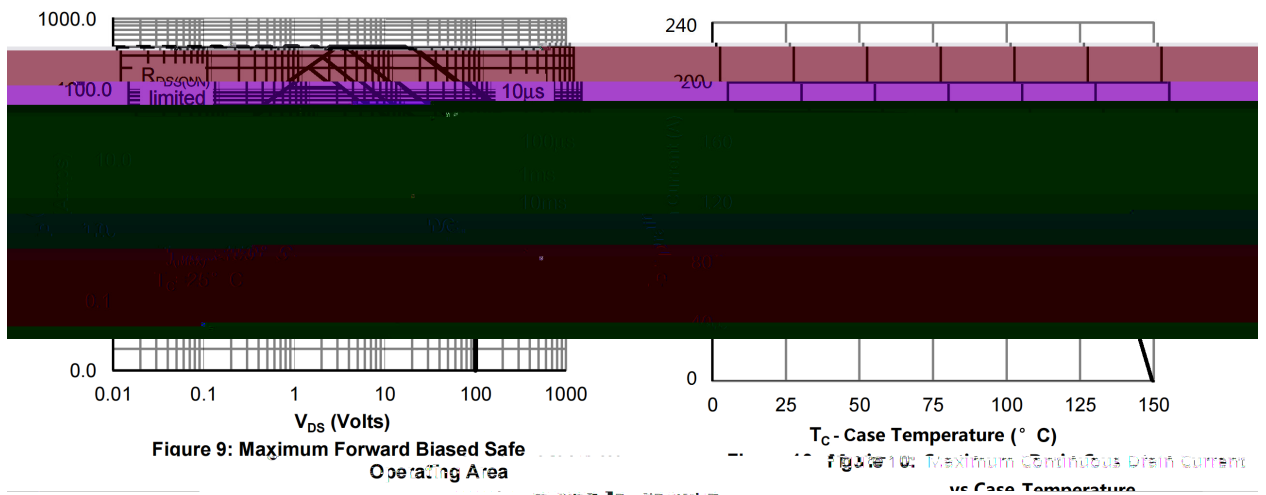
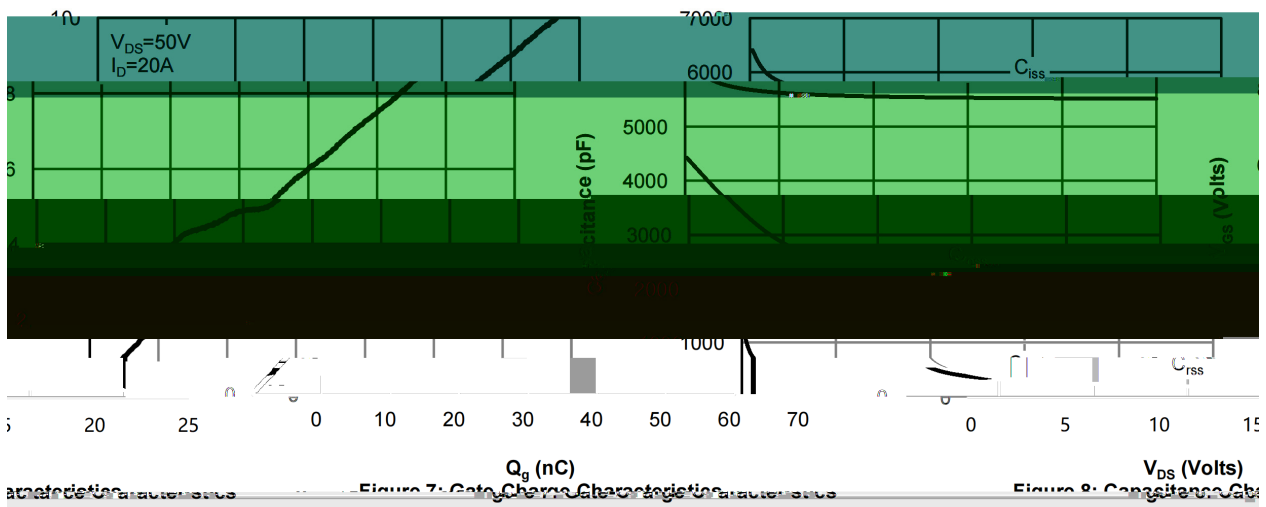
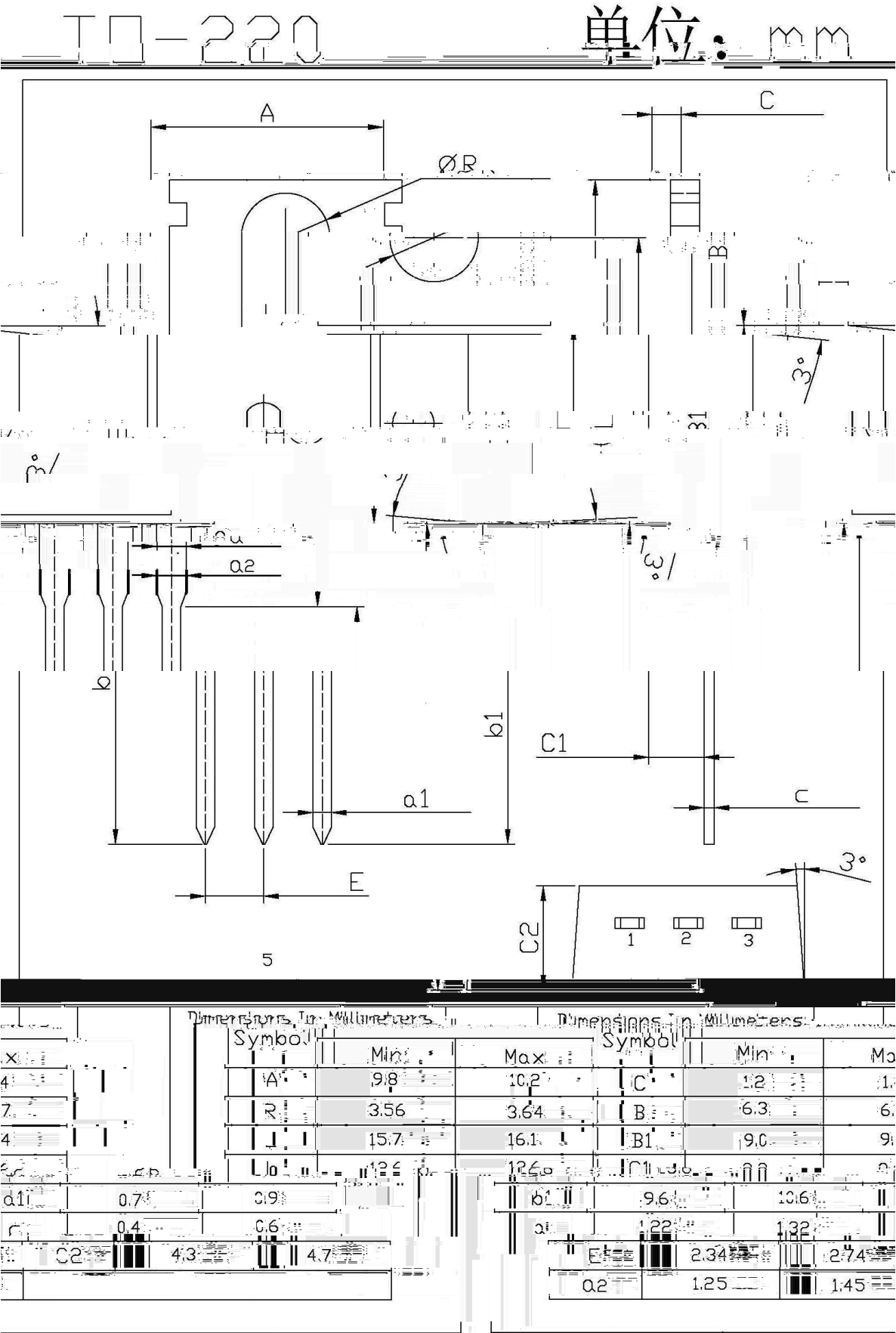
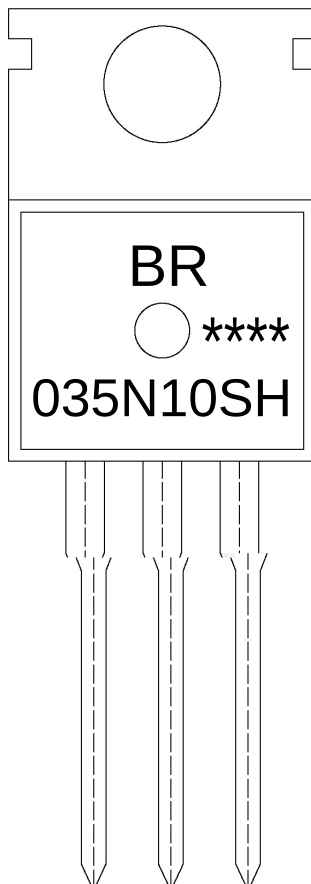


Figure 11: Normalized Maximum Transient Thermal Impedance

Package Dimensions



/ Marking Instructions



Note:

BR: Company Code

035N10SH: Product Type

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

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-----|-----|----|---------|---|
| 1 | 25 | 150 | 60 | 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 255 | 5 | 5 | 0.5sec; | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

270	5	10	1 sec.	Temp.:270±5℃	Time:10±1 sec
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/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm ³)		
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices