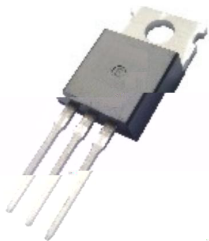
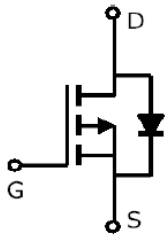


TO-220 P MOS P-CHANNEL MOSFET in a TO-220 Plastic Package.

Low gate charge, low c_{rss} , fast switching.

DC/DC

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



PIN1 G PIN 2 D PIN 3 S

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Drain Current	I_D	-90	A
Drain Current - Pulsed	I_{DM}	-360	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy	E_{AS}	370	mJ
Avalanche current, single pulse	I_{AS}	-37	A
Power Dissipation	$P_{tot}(T_c=25^\circ C)$	137	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=-1mA$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V$ $V_{GS}=0V$ $T_a=25^\circ C$			-1.0	μA
		$V_{DS}=-30V$ $V_{GS}=0V$ $T_a=125^\circ C$			-200	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-1.2		-2.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-20A$		4.4	6	m Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_F=-24A$			-1.2	V
Input Capacitance	C_{iss}	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$		6600		pF
Output Capacitance	C_{oss}			675		
Reverse Transfer Capacitance	C_{rss}			518		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V$ $I_D=-90A$ $V_{GS}=-10V$ $R_{GEN}=3.5\Omega$		35		ns
Turn-On Rise Time	t_r			10		
Turn-Off Delay Time	$t_{d(off)}$			70		
Turn-Off Fall Time	t_f			20		

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate to source charge	Q_{gs}	$V_{DD}=-24V, I_D=-90A,$ $V_{GS}=0 \text{ to } -10V$		42	55	nC
Gate to drain charge	Q_{gd}			10	20	nC
Gate charge total	Q_g			100	130	nC
Gate plateau voltage	$V_{plateau}$			-5.3		V
Diode continuous forward current ²⁾	I_S	$T_C=25^\circ C$			-90	A
Diode pulse current ²⁾	$I_{S,pulse}$				-360	A
Reverse recovery time ²⁾	t_{rr}	$V_R=-15V, I_F=-50A,$ $di_F/dt = -100A/\mu s$		50		nS
Reverse recovery charge ²⁾	Q_{rr}			70		nC
Thermal resistance, junction - case	$R_{\theta JA}$				1.1	K/W
SMD version, device on PCB	$R_{\theta JC}$	minimal footprint			62	
		6 cm ² cooling area ³⁾			40	

1) Current is limited by bondwire; with an $R_{\theta JC} = 1.1K/W$ the chip is able to carry -143A at 25°C.

2) Defined by design. Not subject to production test.

3) Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical in still air.

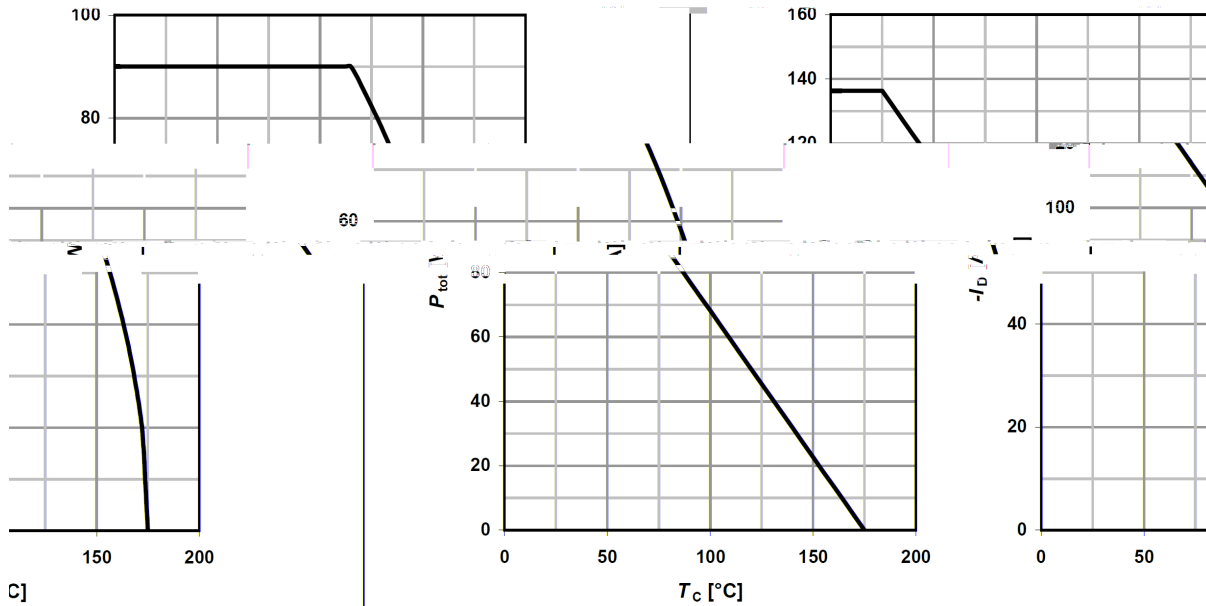
1 Power dissipation

-6V

2 Drain current

$$P_{\text{tot}} = f(T_c); V_{\text{GS}} \leq -6\text{V}$$

$$I_D = f(T_c); V_{\text{GS}} \leq -6\text{V}$$



c]

dance

3 Safe operating area

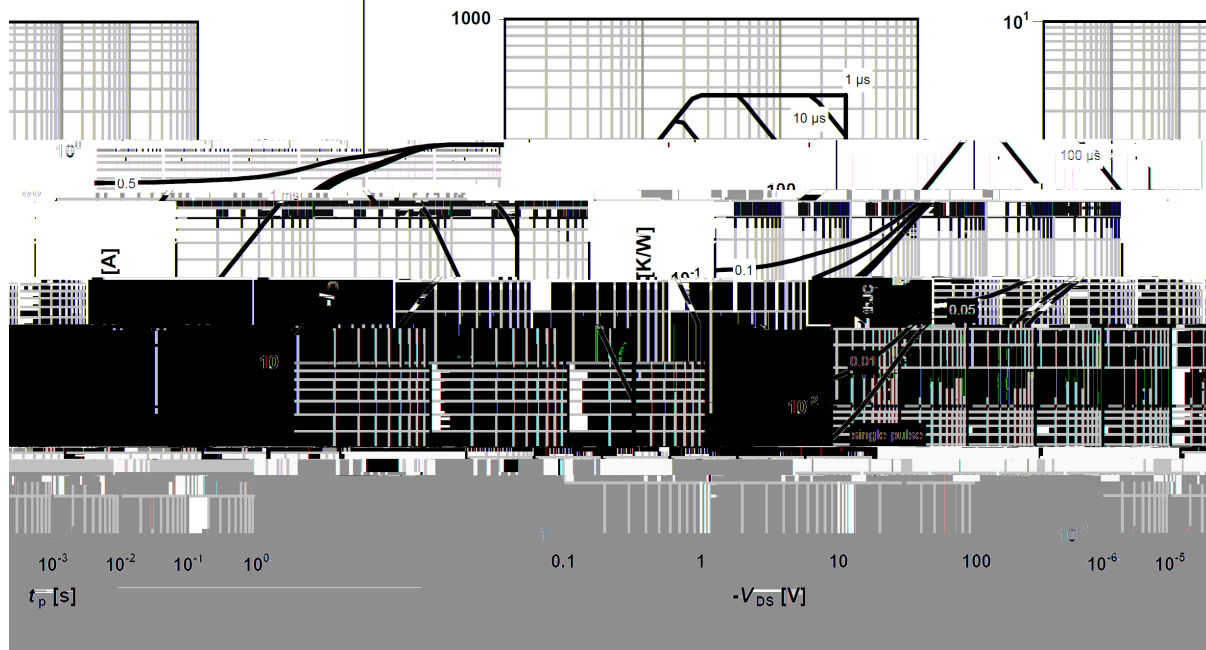
$$I_D = f(V_{\text{DS}}); T_c = 25^\circ\text{C}; D = 0$$

parameter: t_p

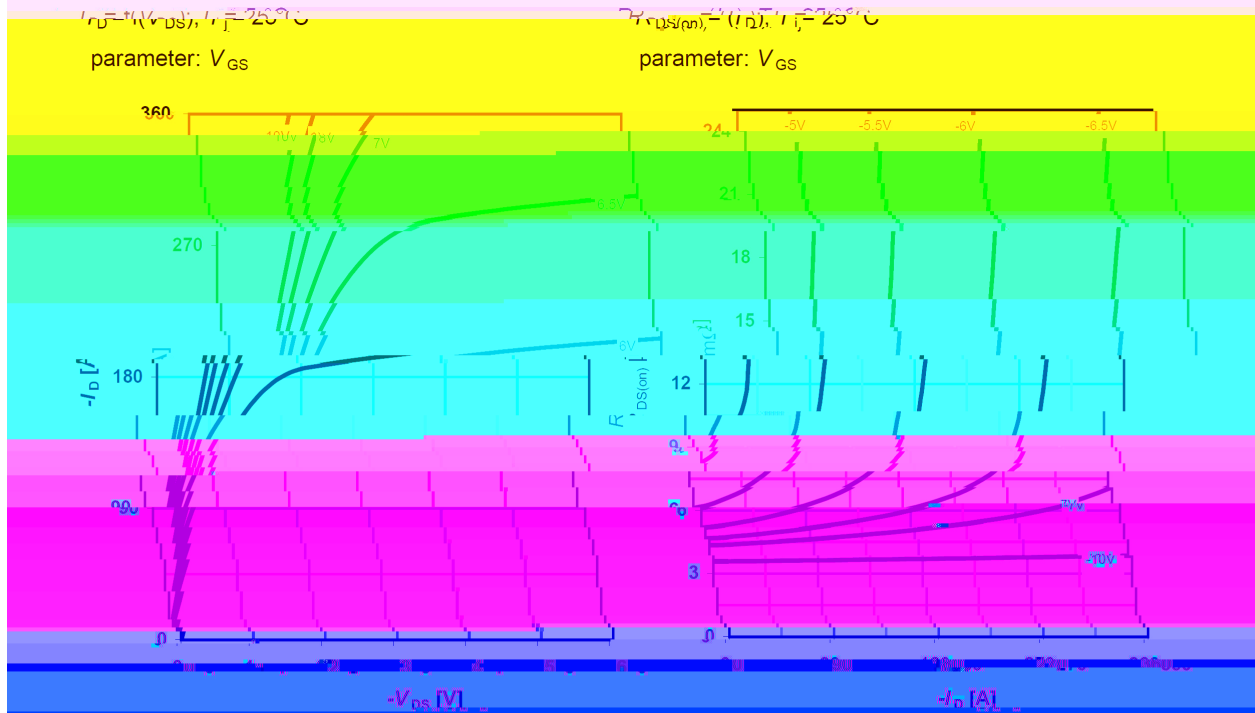
4 Max. transient thermal

$$Z_{\text{thJC}} = f(t_p)$$

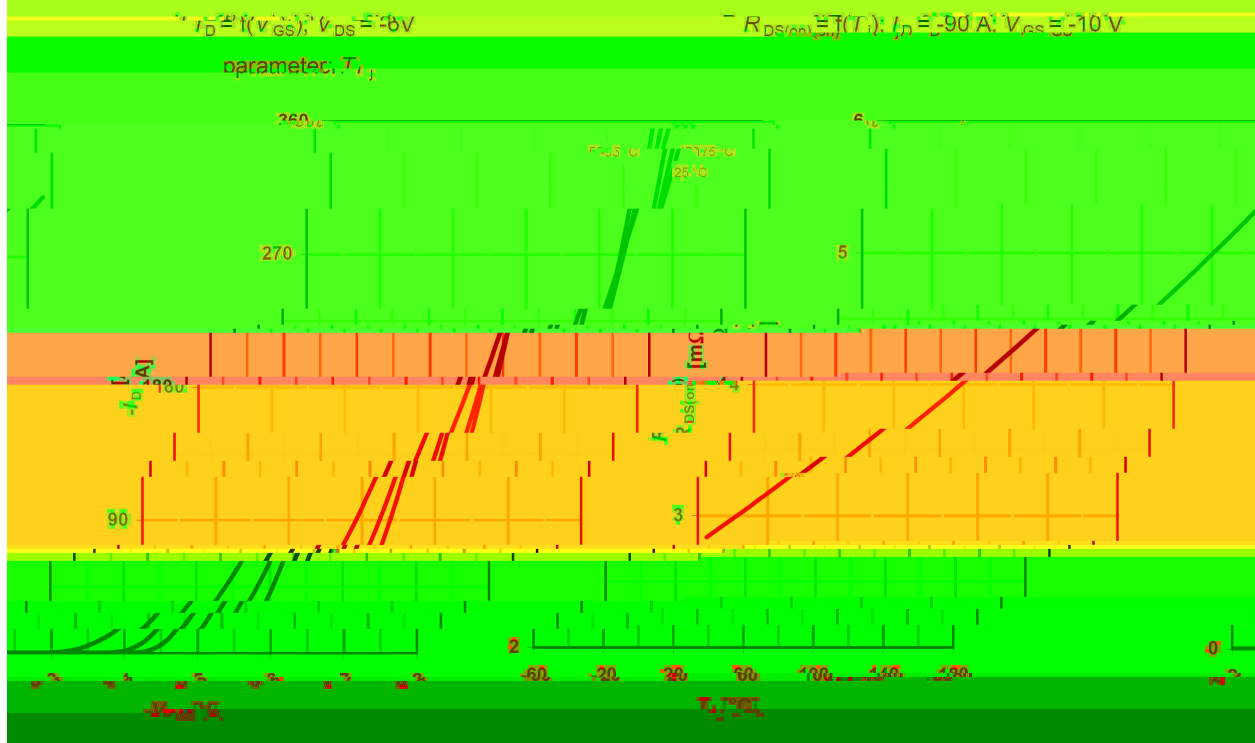
parameter: $D = t_p/T$



5 Typ. output characteristics

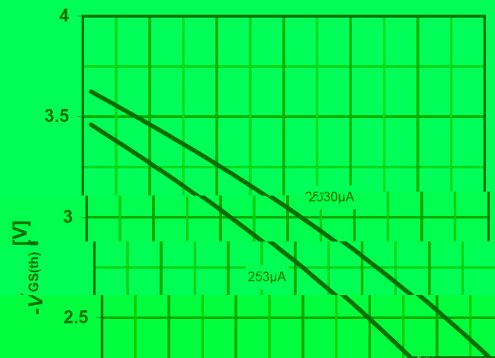


7 Typ. transfer characteristics

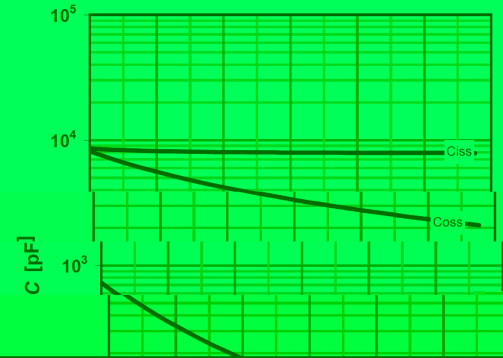


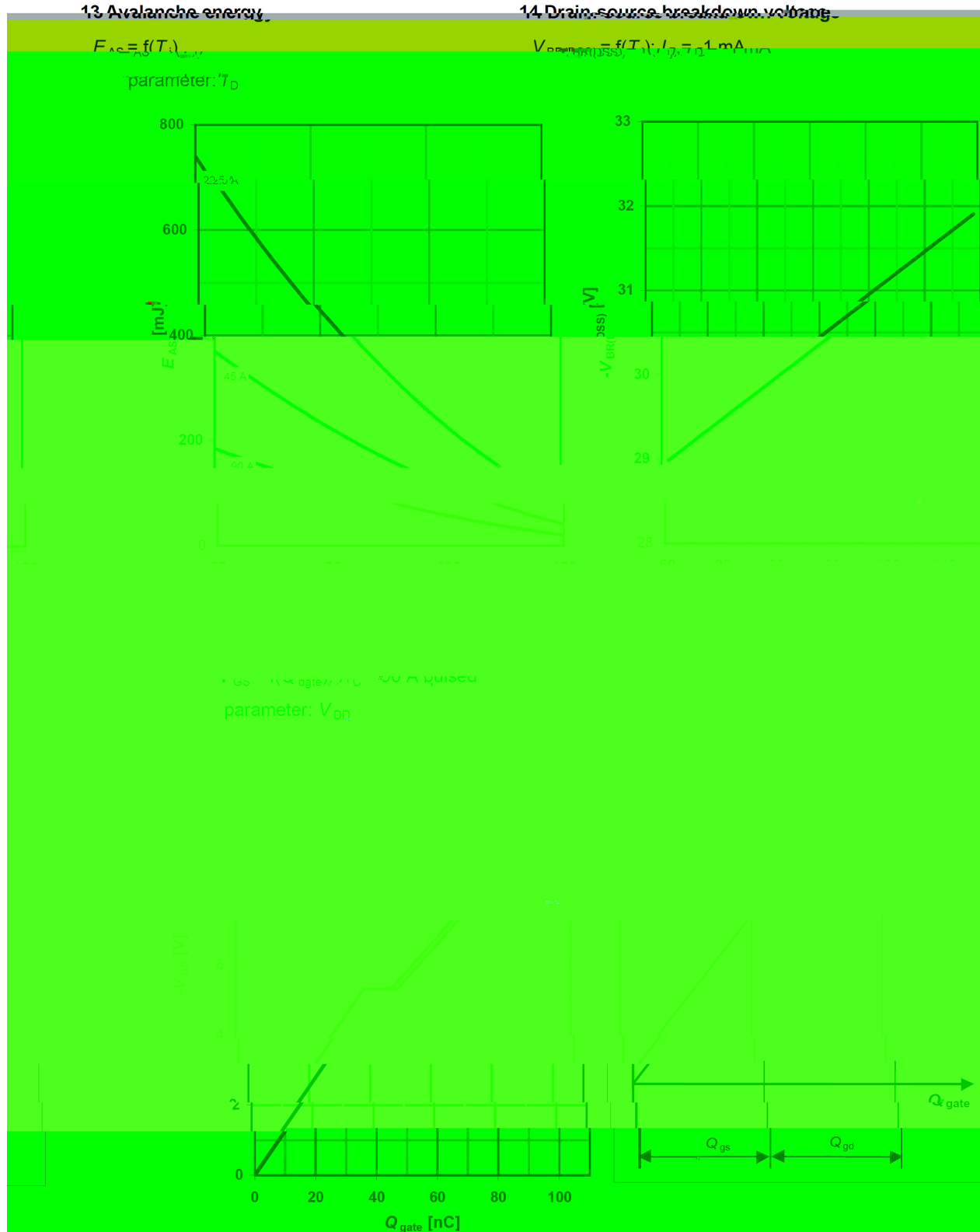
9 Typ. gate threshold voltage

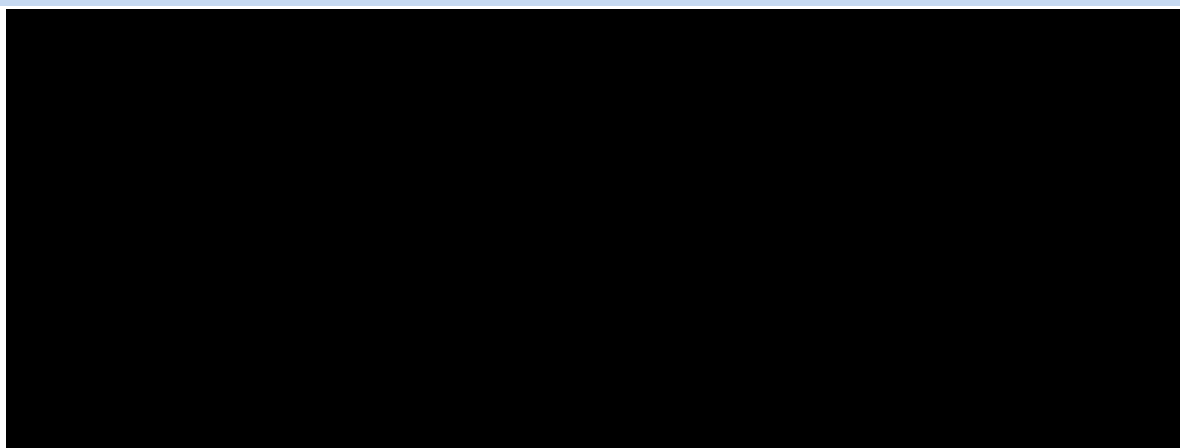
$$V_{GS(th)} = f(T_j); V_{DS} = 1V$$

 parameter: $-I_D$

10 Typ. capacitances

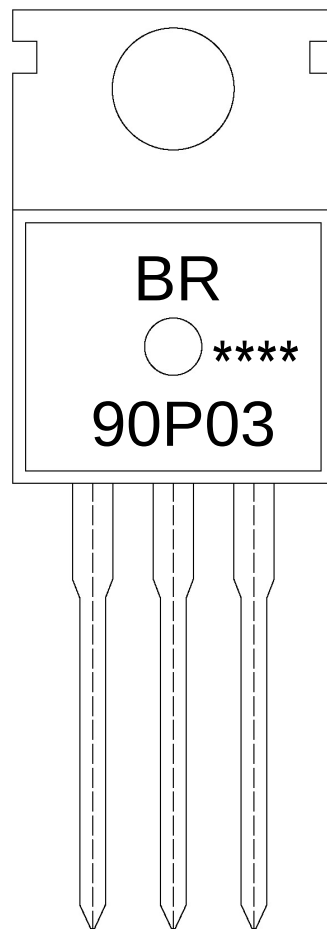
$$C = f(V_{GS}, V_{DS}, f); V_{GS} = 0V, f = 1MHz$$







Symbol	Dimensions in Millimeters	Symbol	Dimensions in Millimeters	Symbol	Dimensions in Millimeters	Symbol	Dimensions in Millimeters
max	1.4	max	9.8	max	10.2	max	1.2
6.7	3.7	2.5	3.3	7.7	3.6	6.3	3.0
9.4		15.7		16.1		9.0	
2.6		12.6		13.6		0.1	2.2
0.9		9.6		10.6		0.7	
0.4		0.035		0.035		0.3	
7.4		4.3		2.5		2.7	
15.4		4.7		0.2	1.25	1.4	



BR

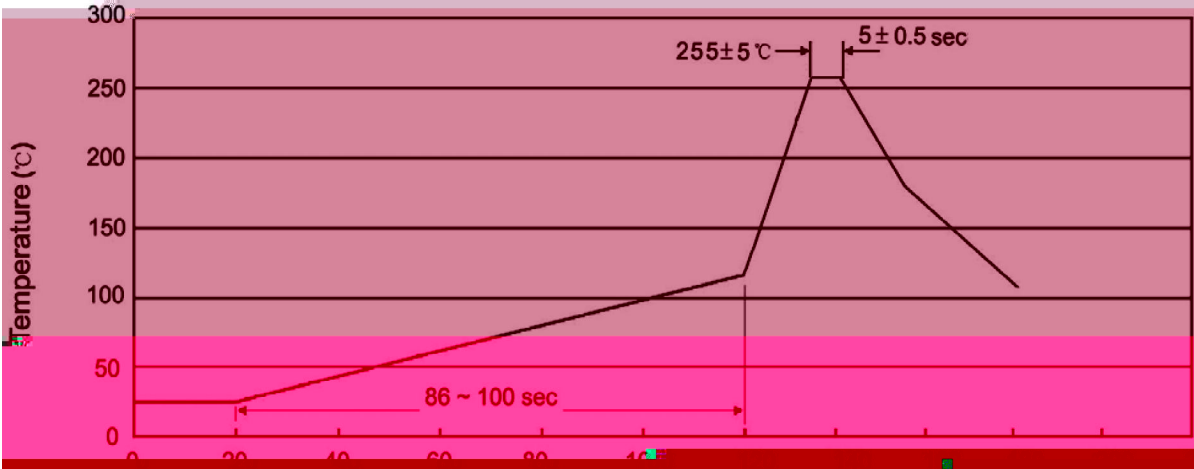
90P03

Note:

BR: Company Code

90P03: Product Type.

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



				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.

270±5	10±1 sec.	Temp.:270±5	Time:10±1 sec
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/ BULK

Package Type
封装形