

BRD50P06Q

Rev.A Sep.-2024



蓝箭电子
BLUE ROCKET ELECTRONICS

DATA SHEET

TO-252 P MOS

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

Low $R_{DS(on)}$, low gate charge, low C_{rss}

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-60	V
Drain Current		$I_D(T_C=25)$	-50	A
Drain Current - Pulsed		I_{DM}	-200	A
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation		$P_D(T_C=25)$	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	
Thermal resistance, junction - ambient	$t \leq 10s$	$R_{\theta JA}$	25	/ W
	Steady-State		50	
Thermal resistance, junction - case	Steady-State	$R_{\theta JC}$	1.5	

/ Electrical Characteristics(Ta=25)

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

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V$ $V_{DS}=-30V$ $R_L=1.5$ $R_{GEN}=3\Omega$		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		

/ Electrical Characteristic Curve

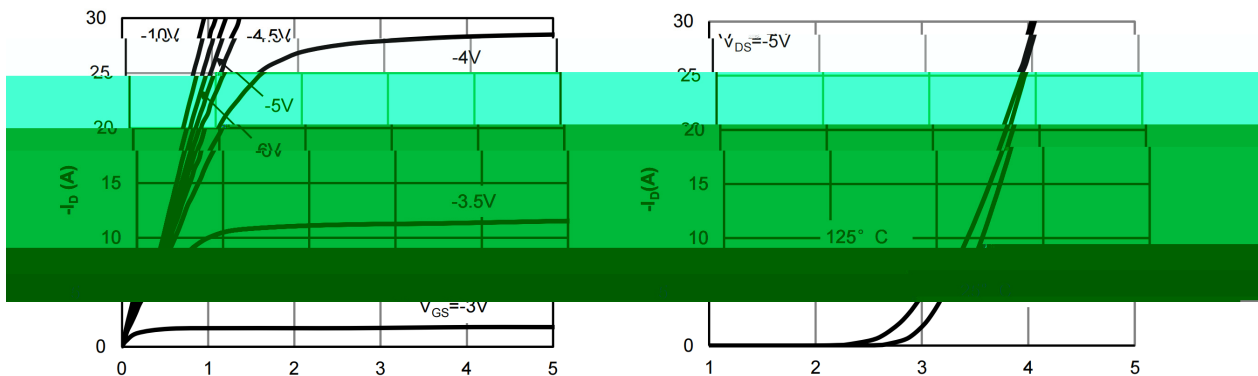
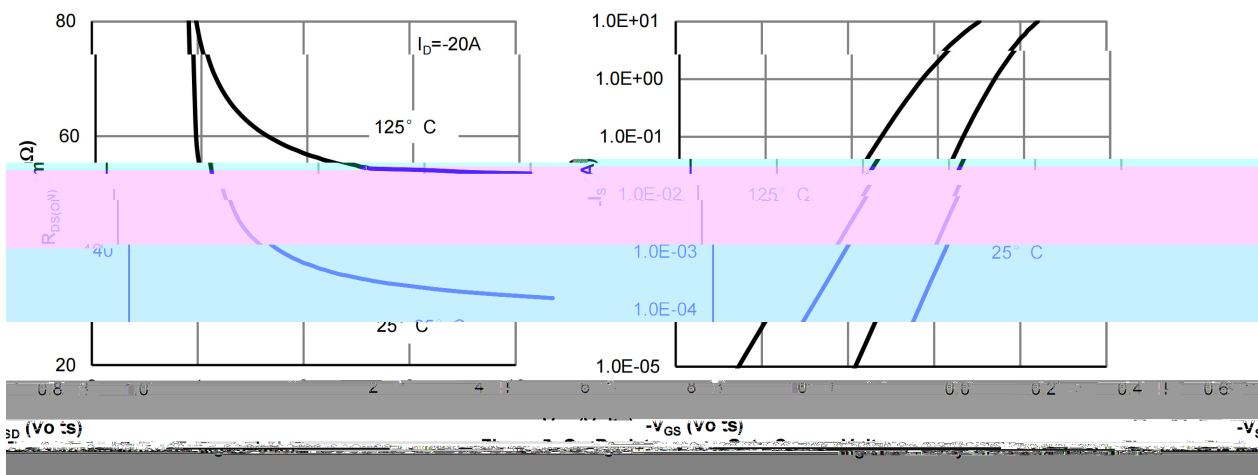
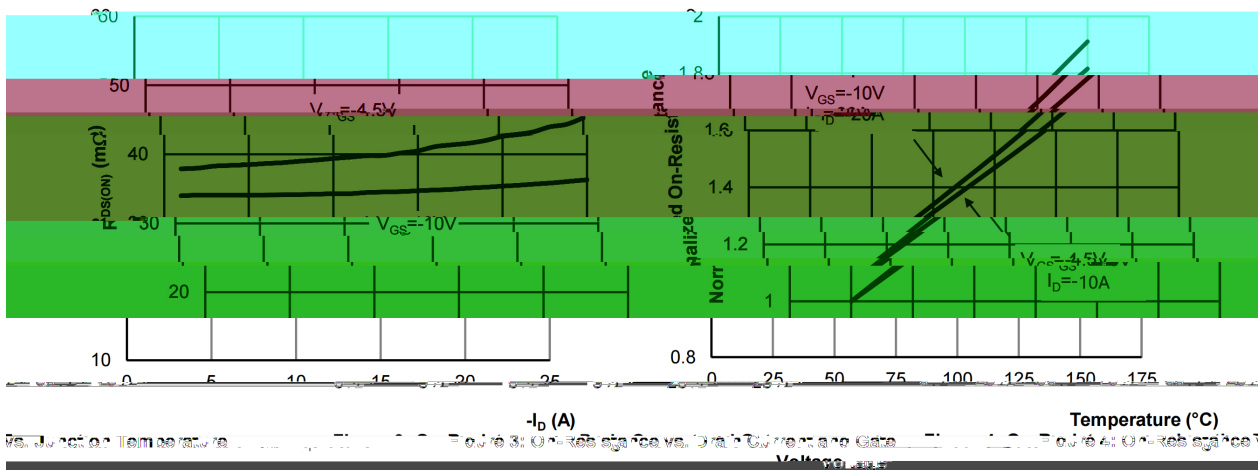
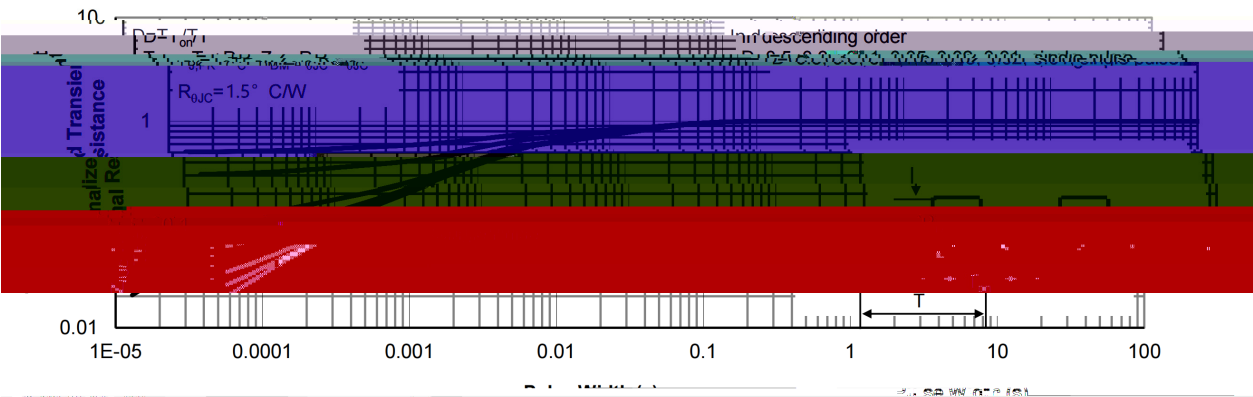
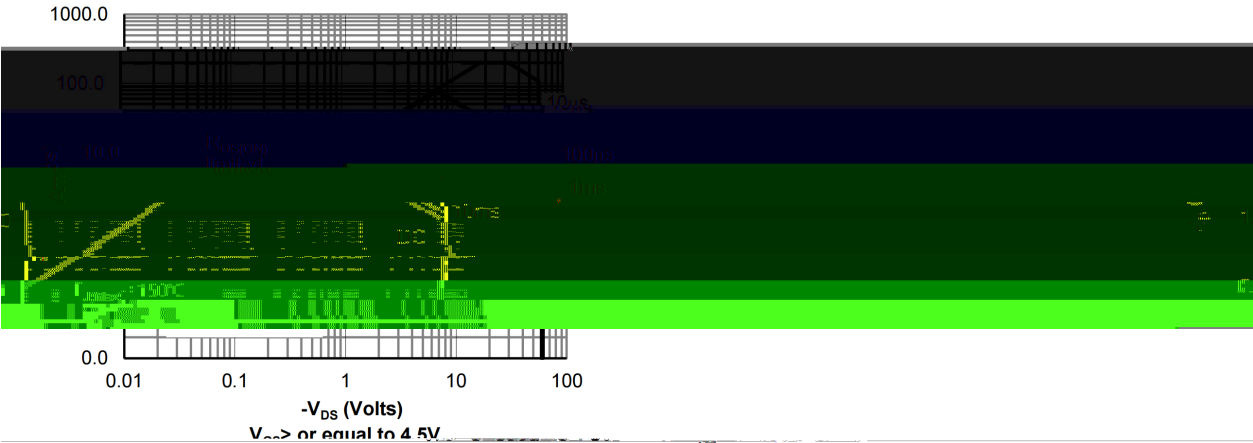
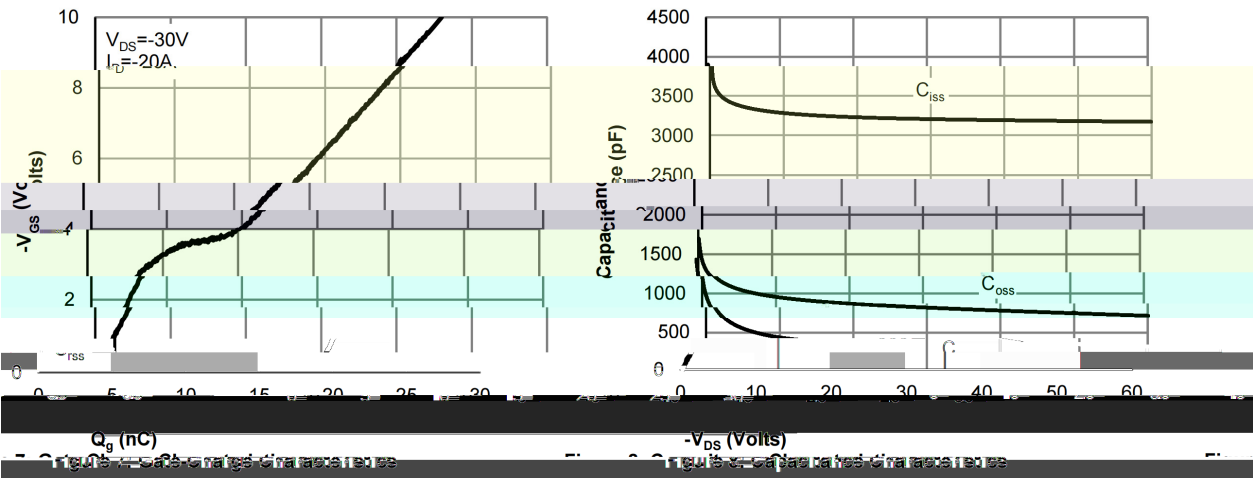


Figure 1: On-Region Characteristics

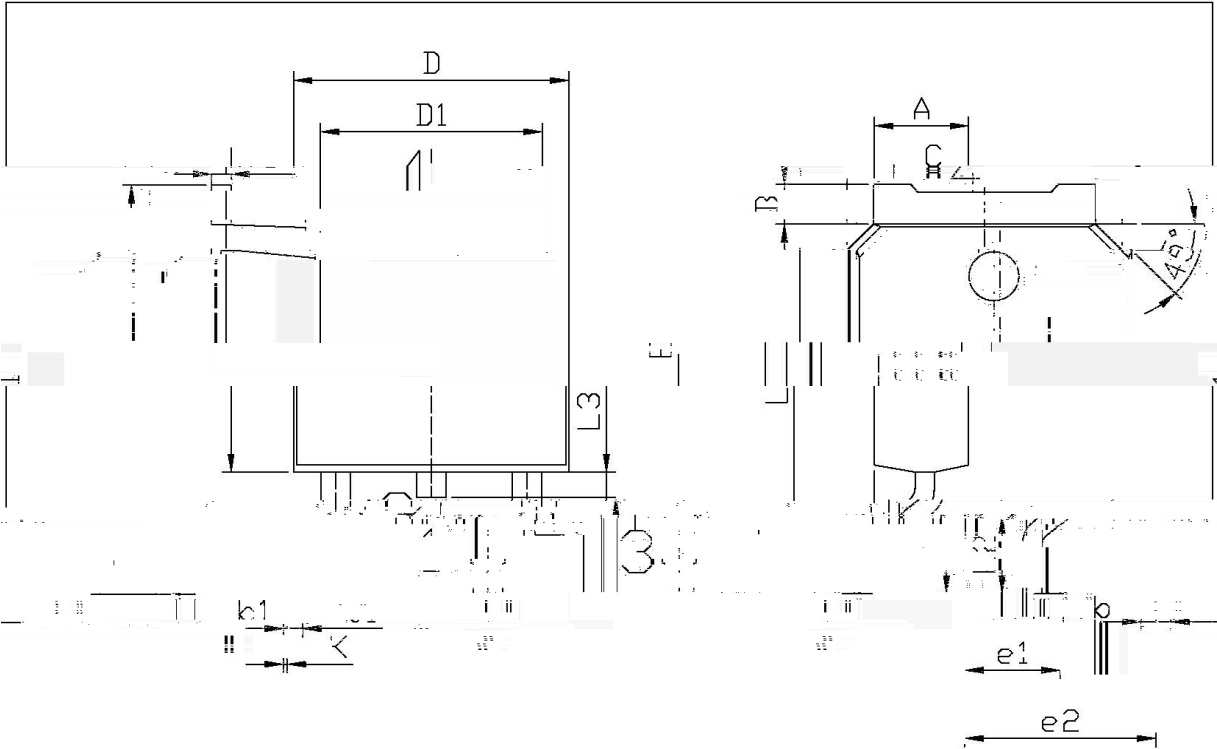
Figure 2: Transfer Characteristics



/ Electrical Characteristic Curve



/ Package Dimensions



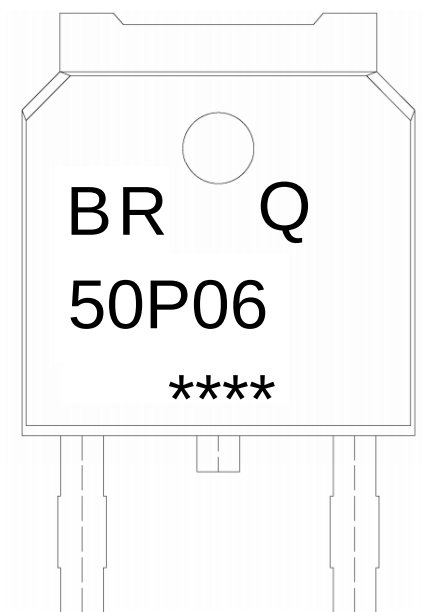
单位: mm

Symbol		Dimensions In Millimeters		Symbol		Dimensions In Millimeters	
		Min	Max			Min	Max
A		6.25	6.75	B		0.95	1.25
B		2.24	2.34	C		0.70	0.90
C		4.35	4.73	D		0.45	0.55
D		9.85	10.35	D1		5.10	5.50
E		0.60	0.90	F		1.70	2.00
F		0.55	0.75	L3		0.75	0.85
L3		0.00	0.10	k1		0.45	0.55
k1		0.00	0.10	k2		0.45	0.55
k2		0.00	0.10	e1		0.45	0.55
e1		0.45	0.55	e2		0.45	0.55
e2		0.45	0.55				

-252

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/ Marking Instructions



BR

Q

Note:

BR: Company Code

Q: Automobile halogen-free product Code

50P06: Product Type Code

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

() / Temperature Profile for IR Reflow Soldering(Pb-Free)

Note:

- 1

150 200

60 120sec;

1.Preheating:150~200 , Time:60~120sec.
- 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

260 5

10 1 sec.

Temp.:260±5

Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension		(unit mm ³)
TO-252	2,e/(/Tj/TT11	1	Tf.2316	0	TD.00/TT1448	.96(2w04963	(5,00/TT14422003	