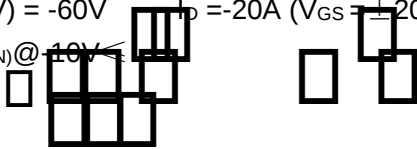


/ Descriptions

TO-252

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

/ Features

 $V_{DS} (V) = -60V$ $I_D = -20A$ ($V_{GS} = \pm 20V$) $R_{DS(ON)} @ -10V \leq$ 

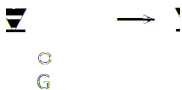
Qualified to AEC-Q101 Standards for High Reliability, HF Product.

/ Applications

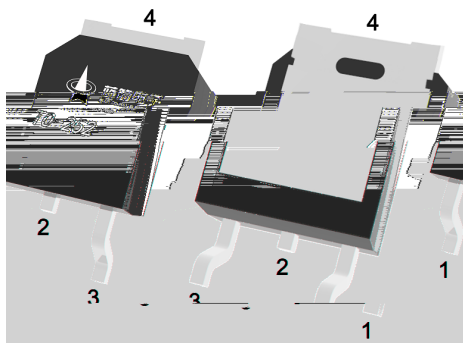


Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit


/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

/ Marking

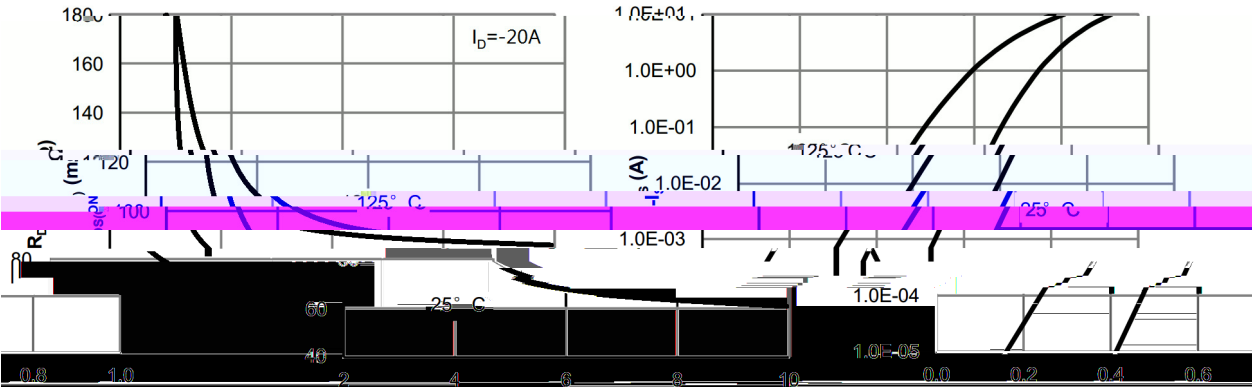
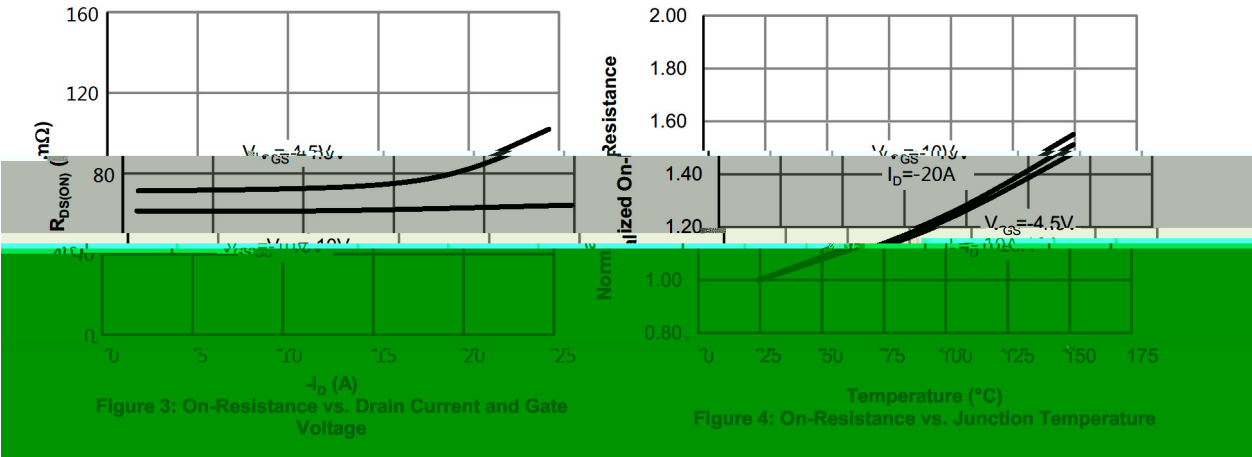
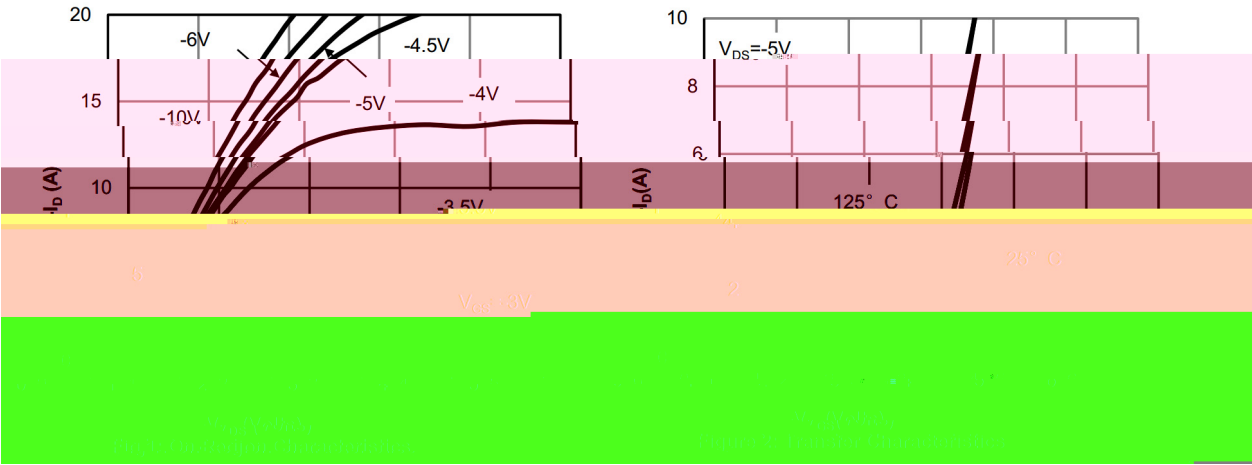
See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D ($T = 25^\circ\text{C}$)	-20	A
Pulsed Drain Current	I_{DM}	-80	A
Avalanche Current	I_{AS}	-13.8	A
Avalanche energy $L=0.5\text{mH}$	E_{AS}	95	mJ
Power Dissipation for Single Operation	P_D ($T_c=25^\circ\text{C}$)	45	W
Maximum Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	50	/W
Thermal Resistance- Junction-to-Case	$R_{\theta JC}$	2.8	/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$I_D=-250\mu\text{A}$ $V_{GS}=0\text{V}$	-60	-69		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60\text{V}$ $V_{GS}=0\text{V}$			-1.0	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$ $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu\text{A}$	-1.0	-1.5	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$ $I_D=-20\text{A}$		62	75	m Ω
		$V_{GS}=-4.5\text{V}$ $I_D=-10\text{A}$		70	100	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$ $V_{GS}=0\text{V}$			-1.0	V
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$ $V_{DS}=-25\text{V}$ $f=1\text{MHz}$		1380		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			65		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=-10\text{V}$ $V_{DS}=-30\text{V}$ $I_D=-4\text{A}$		20.8		nC

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$ $V_{DS}=-30V$ $R_L=7.5\Omega$ $R_{GEN}=3\Omega$		8		ns
Turn-on Rise Time	t_r			3.8		
Turn-off Delay Time	$t_{d(OFF)}$			31.5		

/ Electrical Characteristic Curve



teristics

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

Figure 6: Body-Diode Charac

/ Electrical Characteristic Curve

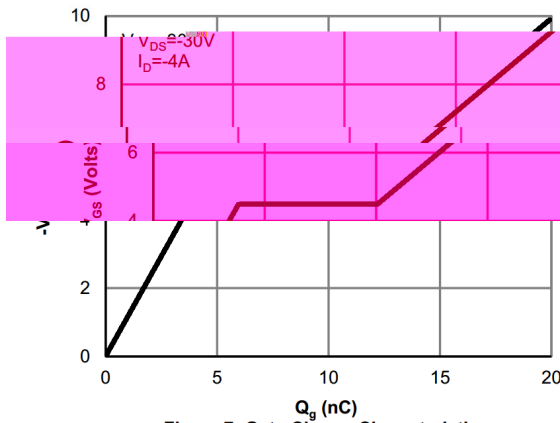


Figure 7: Gate-Charge Characteristics

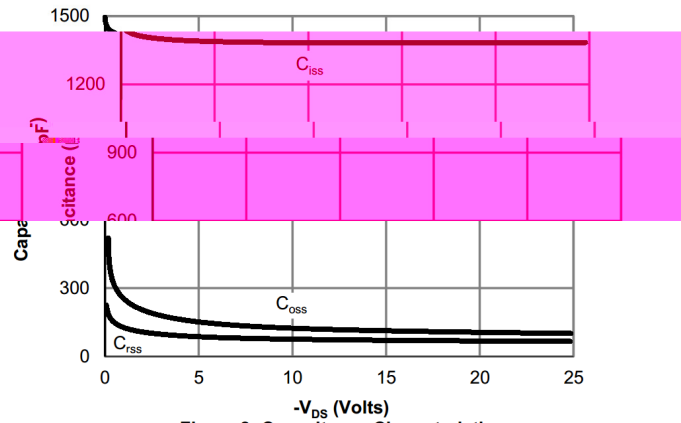


Figure 8: Capacitance Characteristics

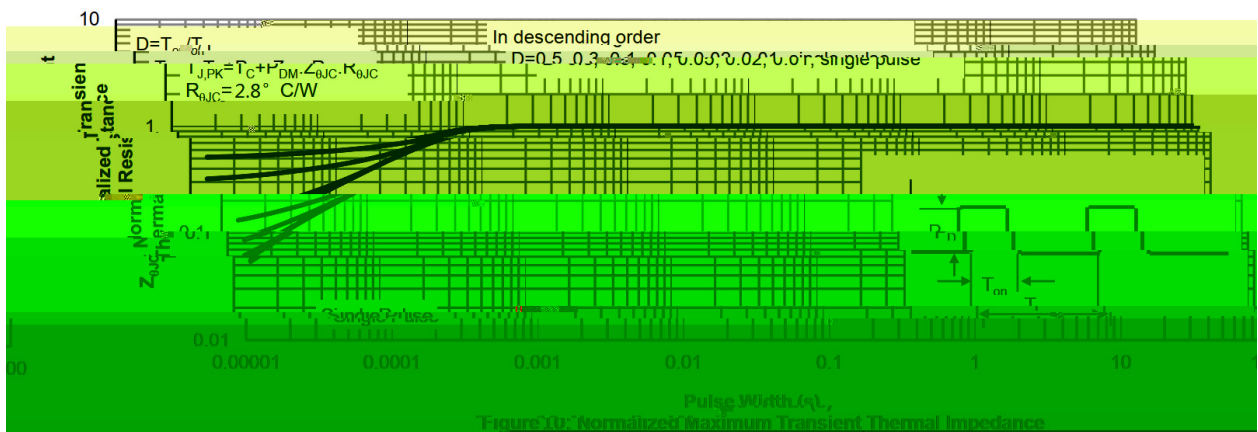
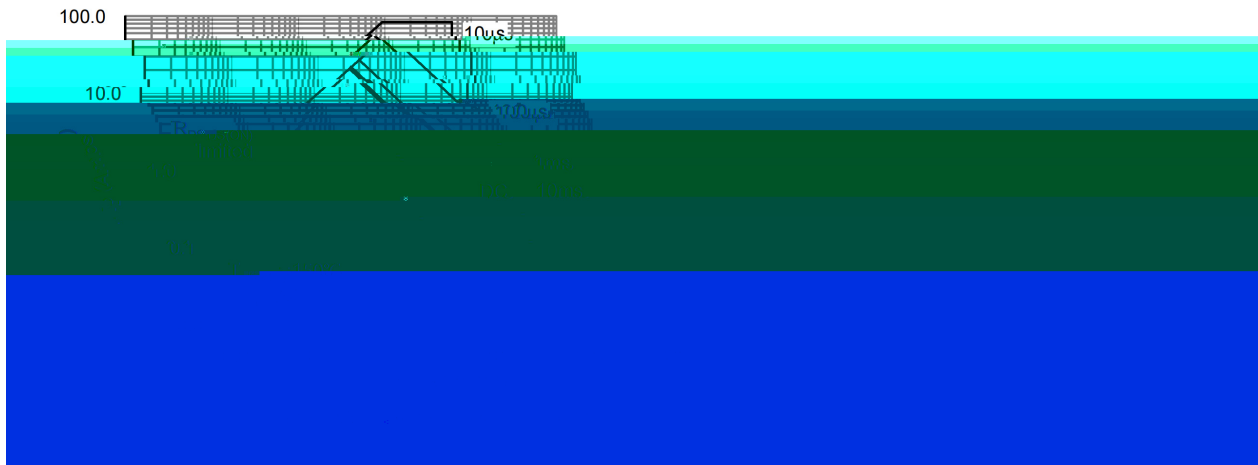
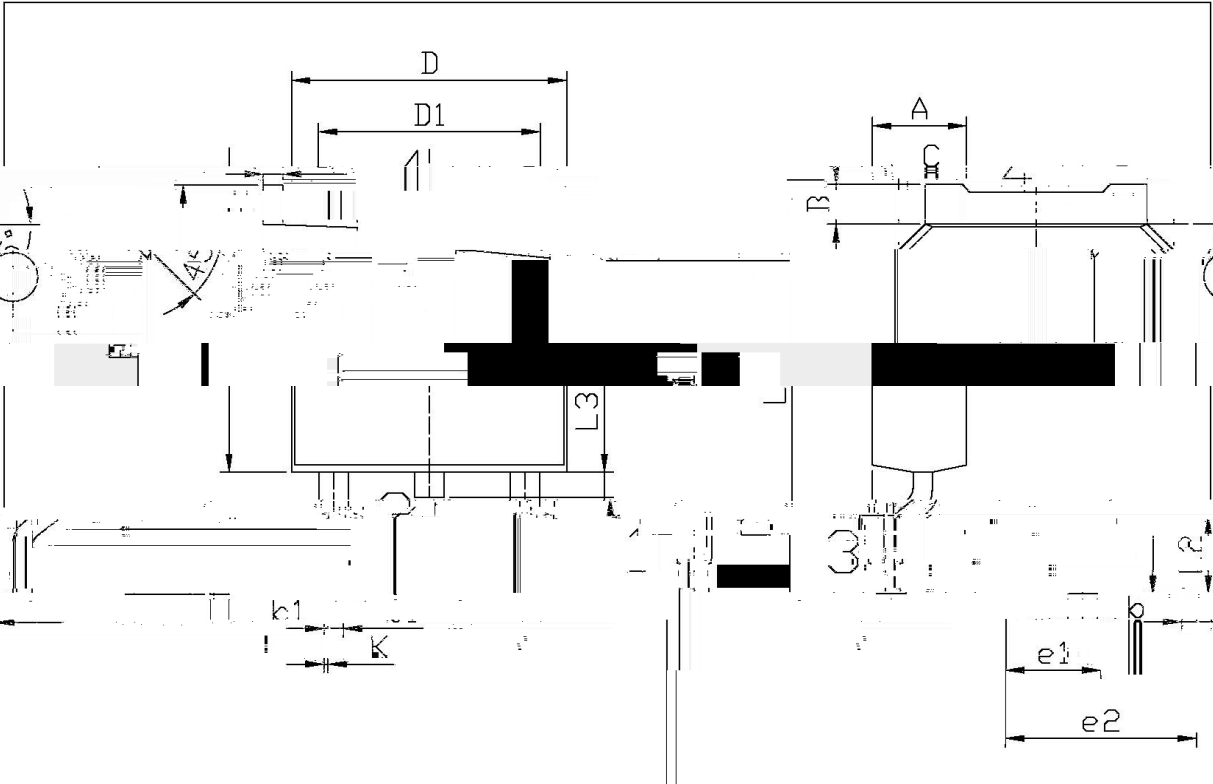


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

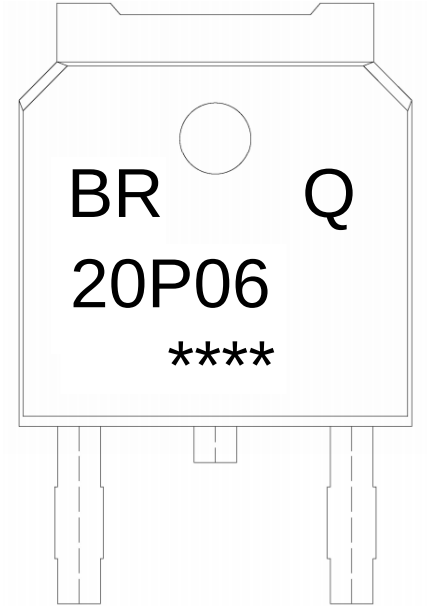


单位: mm

Symbol		Dimensions In Millimeters		Symbol		Dimensions In Millimeters	
		Min.	Max.			Min.	Max.
15	6.25			A	2.20	2.40	5.9
24	2.34			B	0.95	1.25	2.5
3	0.70	0.70	0.90	b1	0.45	0.55	4.2
L1	9.85	10.35					
45	6.75	1.3	0.60	L2	1.70	2.00	6.0
5.10	5.50		0.00	K	0.10		
						D1	

T0-252

/ Marking Instructions



BR

Q

20P06

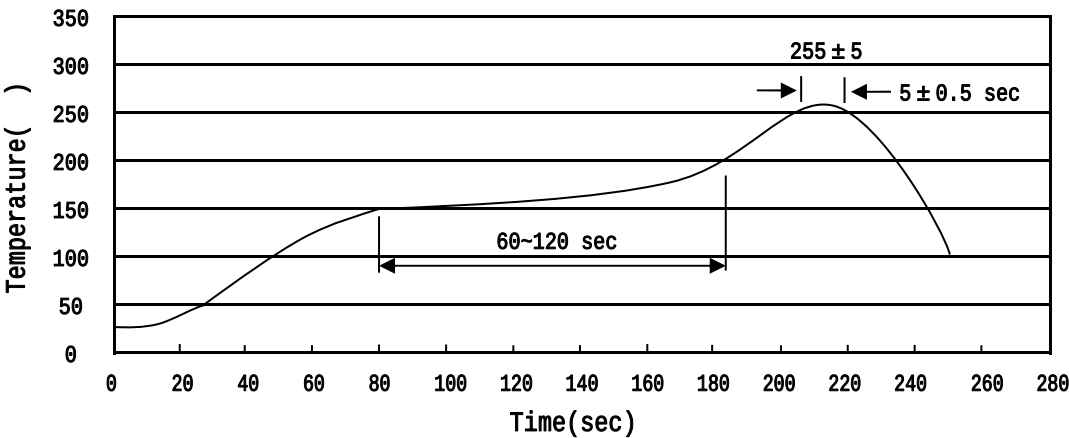
#

#

Note:

- | | |
|--------|---------------------------------------|
| BR: | Company Code |
| Q: | Automobile halogen-free product Code |
| 20P06: | 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)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

/ 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-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices