/ Descriptions

TO-252 P

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

/ Features

$R_{DS(on)}$ C_{rss} AEC-Q101

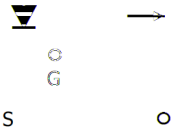
Low $R_{DS(on)}$,low gate charge, low C_{rss}, fast switching, Trench Technologies, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

/ Applications

DC/DC

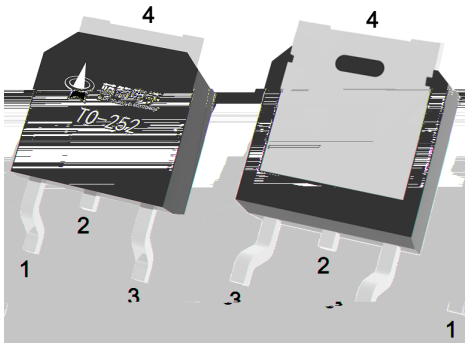
Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit



S

/ Pinning



PIN1 G PIN 2 D PIN 3 S PIN 4 D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	-40	V
Drain Current		I_D(Tc=25℃)	-40	A
Drain Current - Pulsed		I_{DM}	-115	A
Gate-Source Voltage		V_{GS}	±20	V
Avalanche Current		I_{AS}	24.5	A
Single Pulsed Avalanche Energy（L=0.5mH）		E_{AS}	210	mJ
Power Dissipation		P_D(Tc=25℃)	52	W
Storage Temperature Range		T_{stg}	-55～150	
Thermal Resistance-Junction to Ambient	t ≤ 10s	$R_{\theta JA}$	20	℃/W
	Steady-State		50	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	2.4	

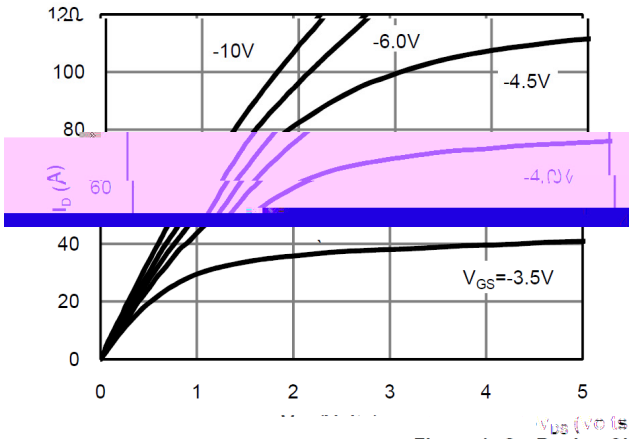
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250 A	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V V_{GS}=0V			1.0	A
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±0.1	A
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250 A	-1.0	-1.7	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V I_D=-20A		13	15	m
		V_{GS}=-4.5V I_D=-10A		17	30	
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=-1A			-1.2	V
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V, f=1MHz		6.5		
Input Capacitance	C_{iss}	V_{DS}=-25V V_{GS}=0V f=1.0MHz		2680		pF
Output Capacitance	C_{oss}			1150		
Reverse Transfer Capacitance	C_{rss}			870		
Total Gate Charge	Q_g(10V)	V_{GS}=-10V V_{DS}=-20V I_D=-20A		42		nC
Total Gate Charge	Q_g(4.5V)			18.6		
Gate Source Charge	Q_{gs}			7		
Gate Drain Charge	Q_{gd}			8.6		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-10V V_{DS}=-20V R_L=1Ω R_{GEN}=3		9.4		ns
Turn-On Rise Time	t_r			20		
Turn-Off Delay Time	$t_{d(off)}$			55		
Turn-Off Fall Time	t_f			30		

/ Electrical Characteristic Curve



acteristics

Figure 1: On-Region Characteristics

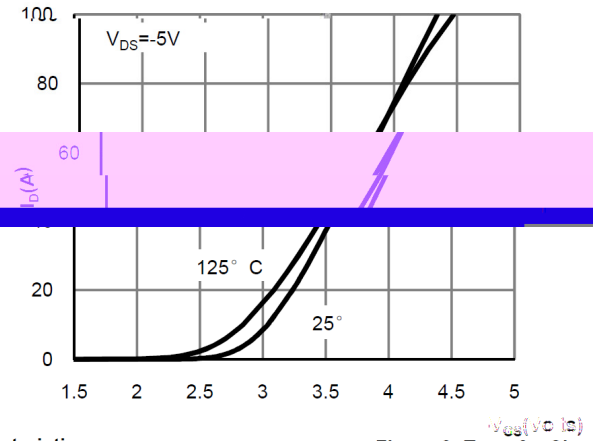
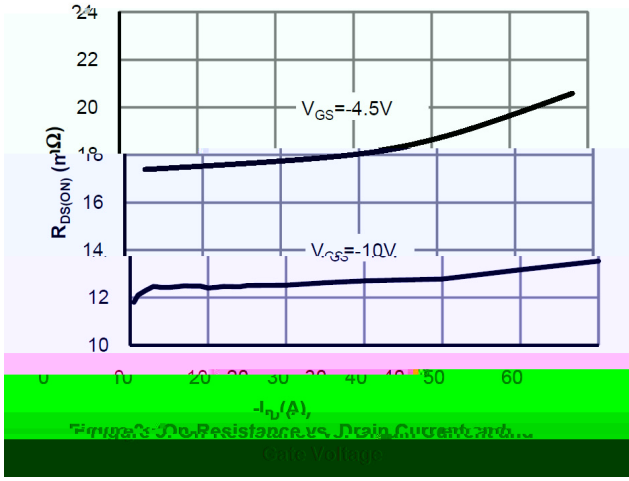
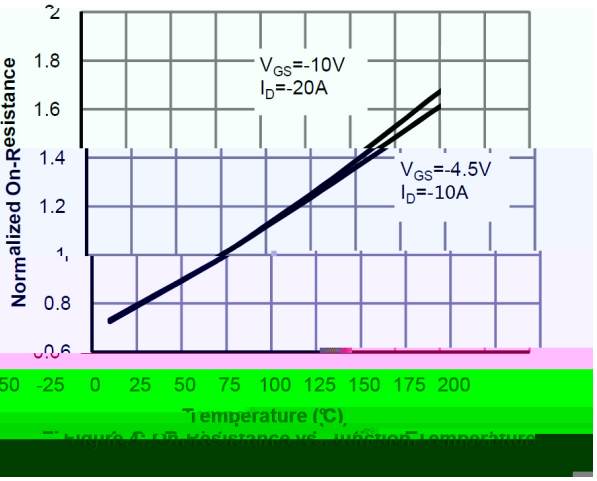
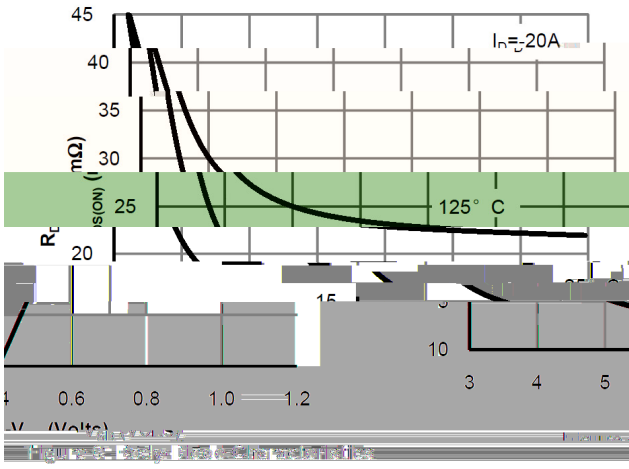
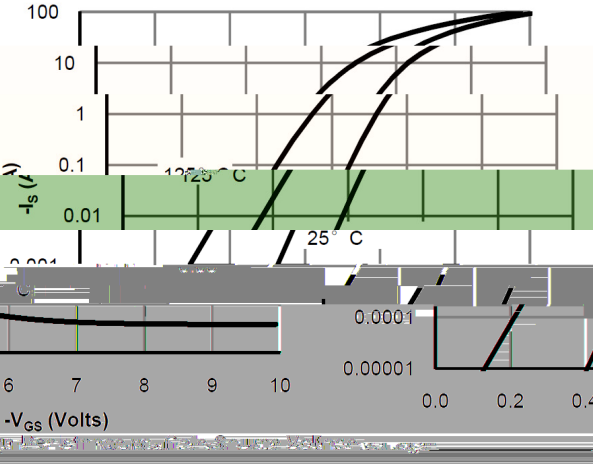


Figure 2: Transfer Char

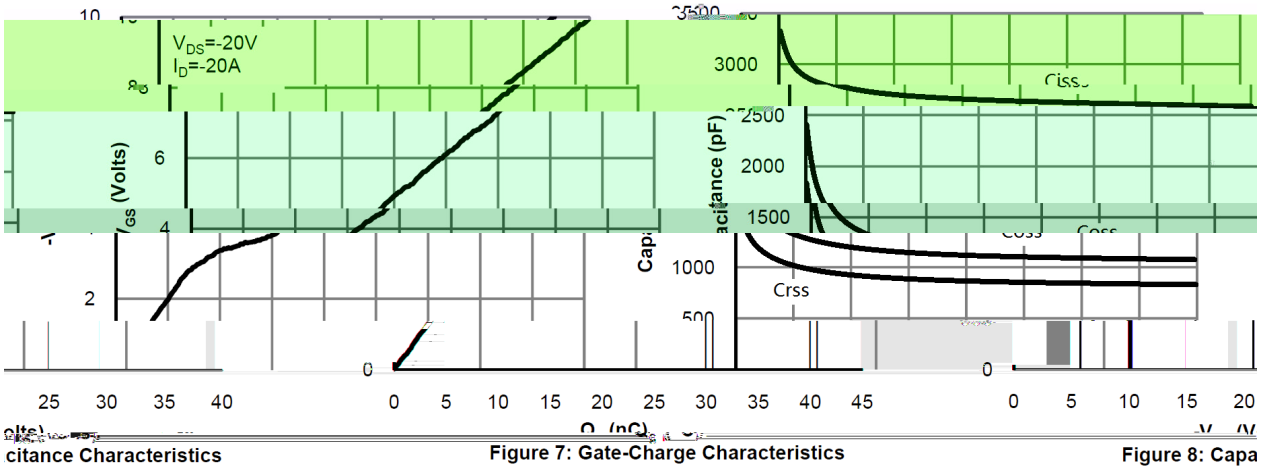








/ Electrical Characteristic Curve



citance Characteristics

Figure 7: Gate-Charge Characteristics

Figure 8: Capa

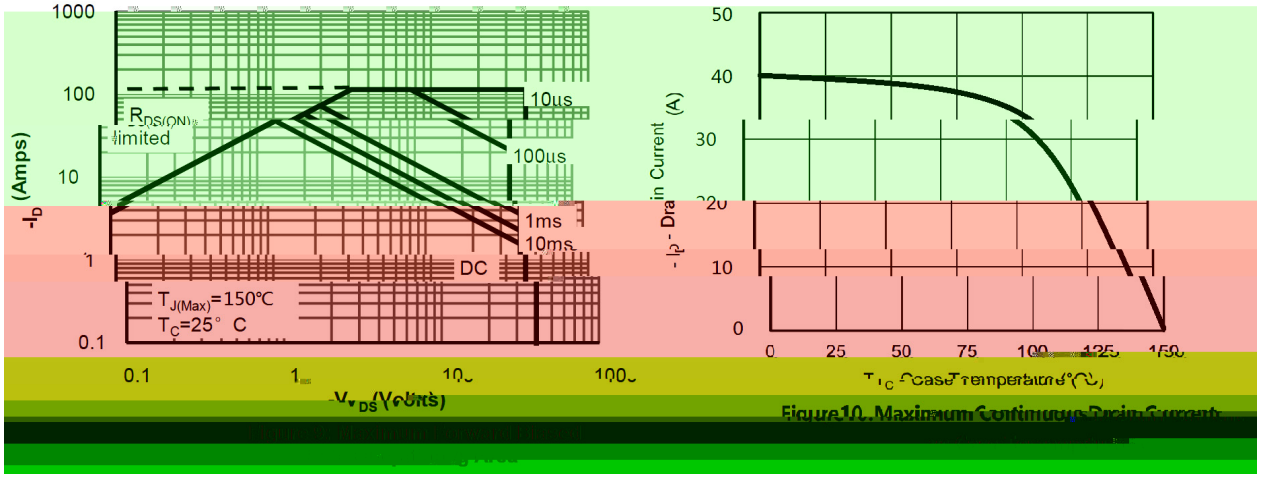


Figure10. Maximum Continuous Drain Current

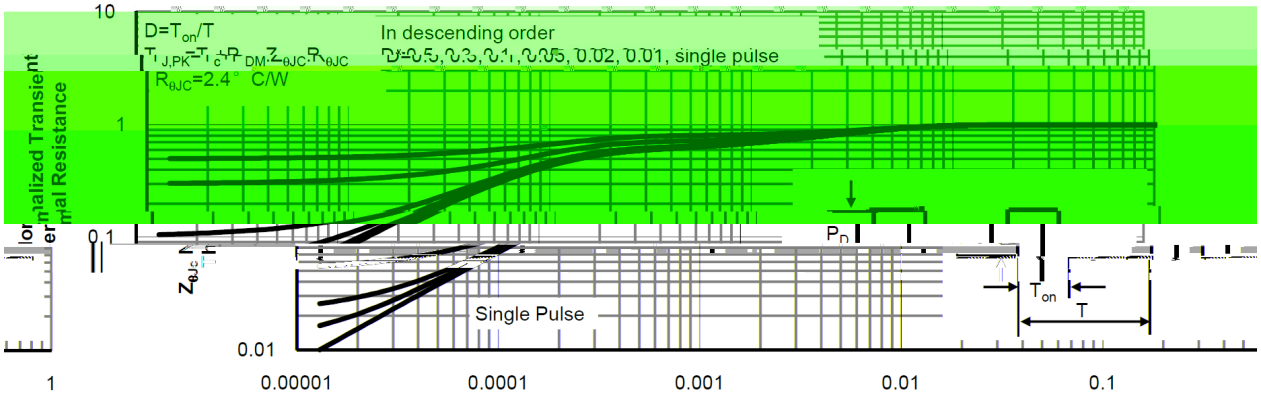
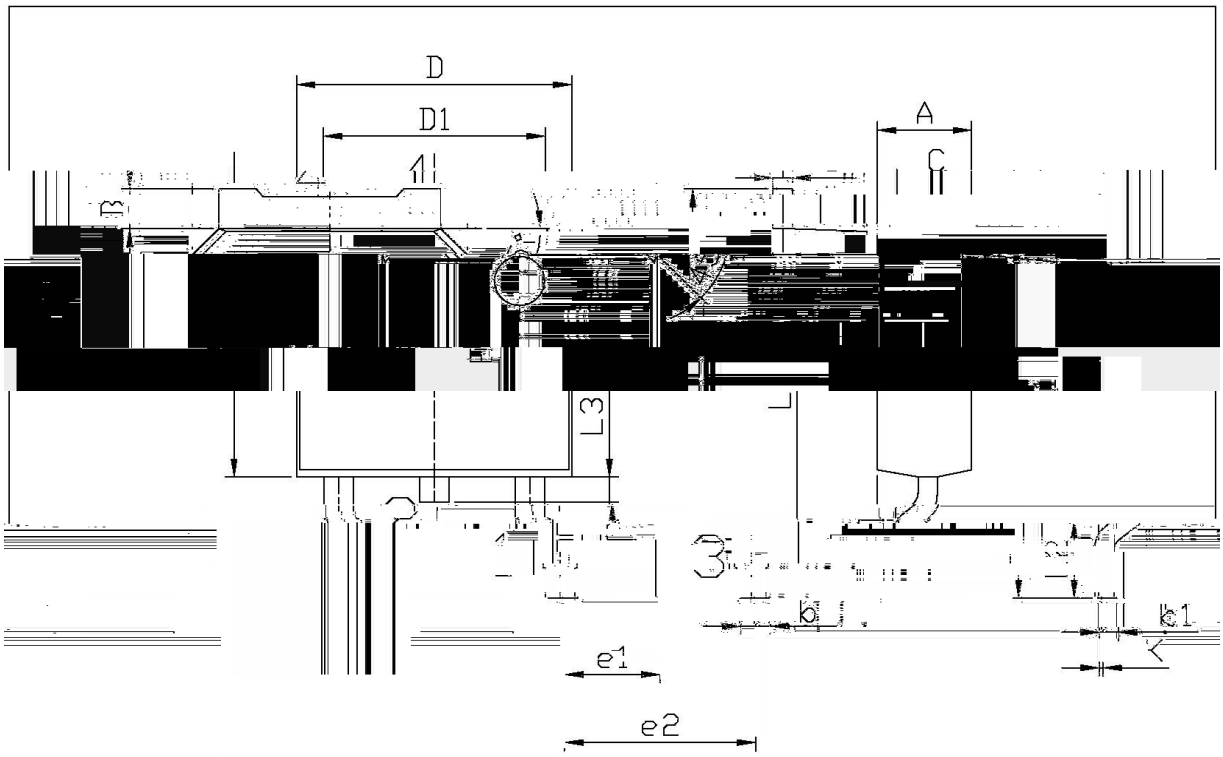


Figure 11: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

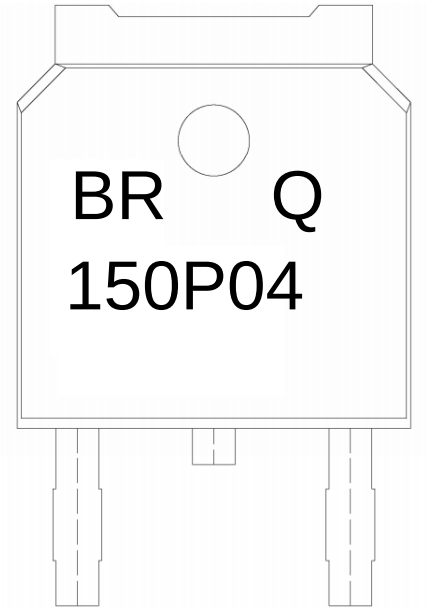


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
35	6.25	A	2.20	2.40	E
24	2.34	B	0.95	1.25	e1
63	e2 4.73	b	0.78	b2	
	L1 9.85	10.35	b1	0.45	0.55
	C	0.45 0.55	L2	1.70	2.00
	0.90	D	6.45	6.75	L3 0.60
	0.00	0.10	D1	5.10	5.50 K

TO-252

/ Marking Instructions



BR

Q

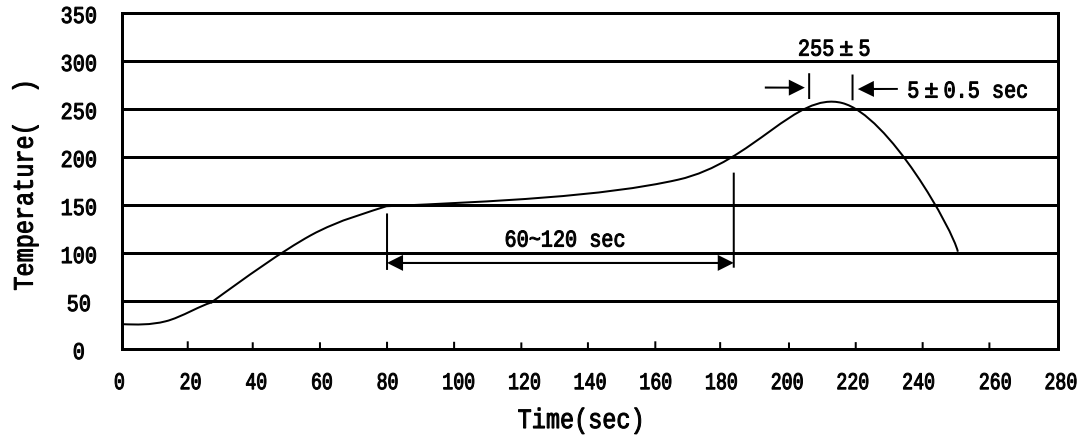
150P04

****

Note:

BR:	Company Code
Q:	Automobile halogen-free product Code
150P04:	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 mm³)
TO-252	2,500	2	5,000	6	30,000	13″ ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension		(unit mm³)
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices