

5 é / Descriptions

TO-252 .> // x 6 ?ú 3 « | • 'ož

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

α a / Features

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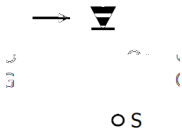
Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching, Trench Technologies, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

Đ ÷ / Applications

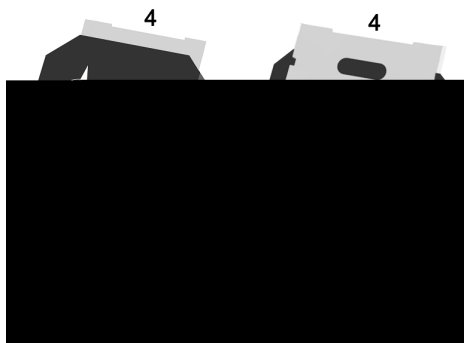
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Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products, Meet the stringent requirements of automotive applications.

Ã w] Ô • / Equivalent Circuit



• Ů - æ / Pinning



PIN1 y G

PIN 2 y D

PIN 3 y S

PIN 4 y D

, M V / Marking

• - ~ ^a ¢ ož See Marking Instructions.


Table 1 / Absolute Maximum Ratings(Ta=25 ;)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Drain Current	$I_D(T_c=25^\circ\text{C})$	-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 $\Delta L=0.5\text{mH}$	E_{AS}	210	mJ
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	52	W
Storage Temperature Range	T_{stg}	-55 ~ 150	
Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	20
	Steady-State		50
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	2.4

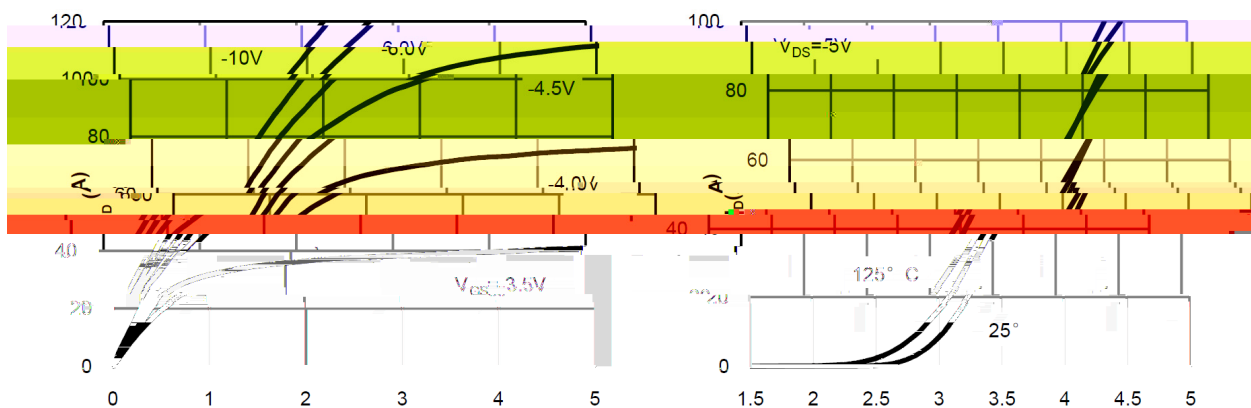
Table 2 / Electrical Characteristics(Ta=25 ;)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=-250\text{A}$	-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}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\text{A}$	-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	$V_{GS}=0V$ $V_{DS}=0V$, $f=1\text{MHz}$		6.5		
Input Capacitance	C_{iss}	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		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 ;)

@ f Parameter	... Z Symbol	y i Ú ^ Test Conditions	Â 4 > Min	Á ° > Typ	Â Ý > Max	% y Unit
Turn-On Delay Time	t _{d(on)}	V _{GS} =-10V V _{DS} =-20V R _L =1 i 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		

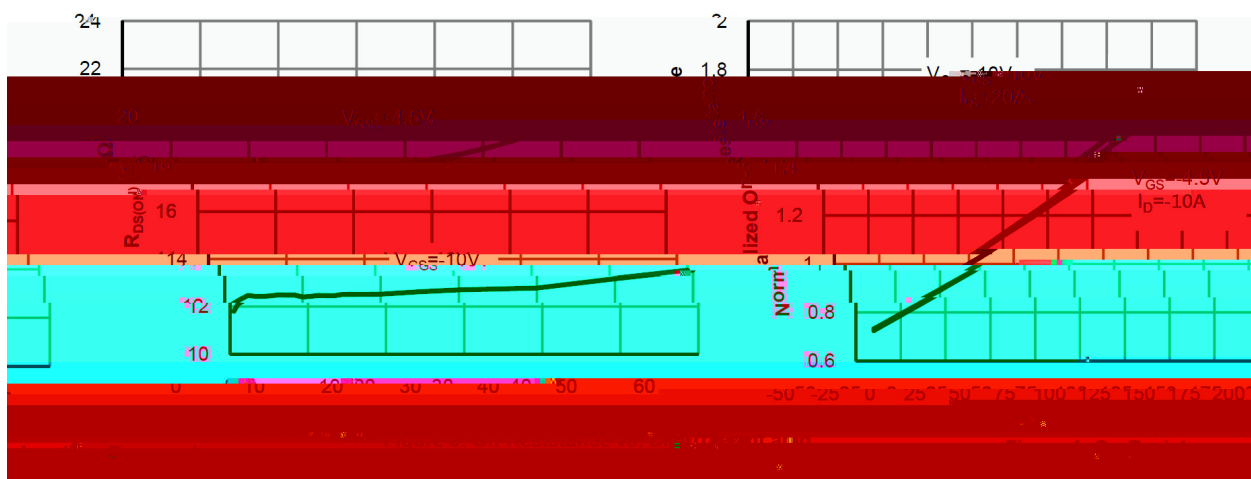
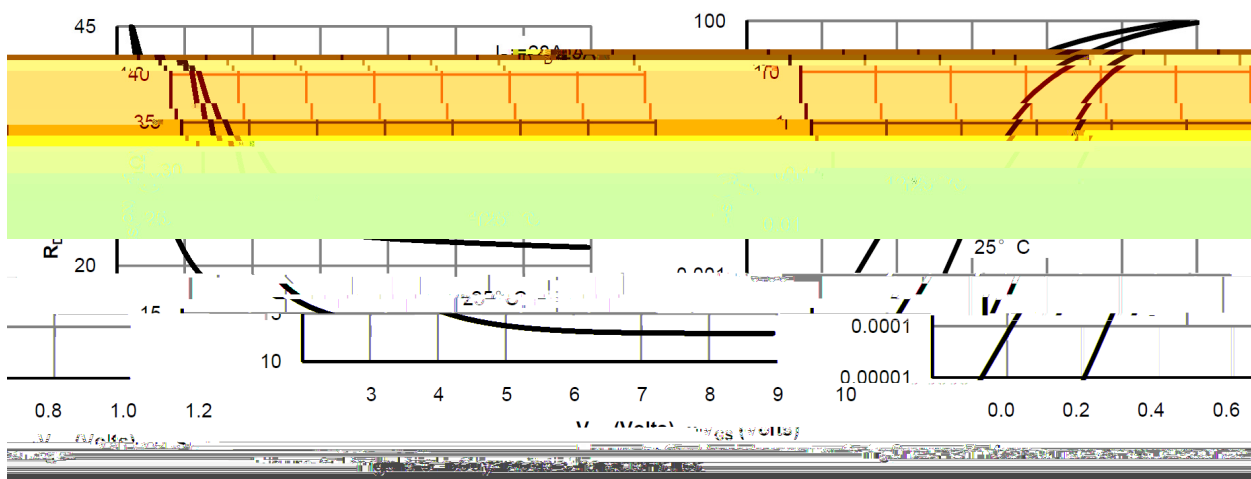
Electrical Characteristic Curve



Transfer Characteristics

Figure 1: On-Region Characteristics

Figure 2:



Electrical Characteristic Curve

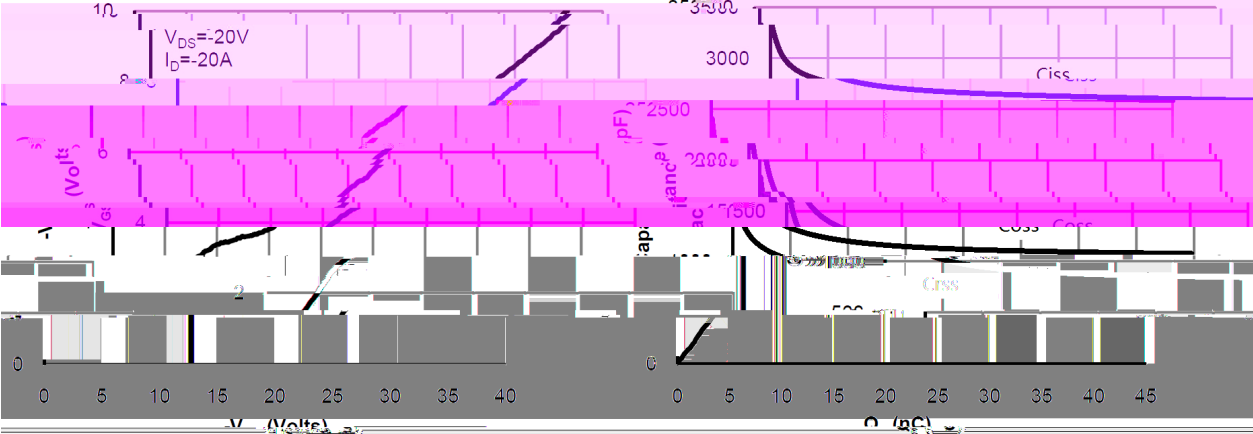


Figure 8: Capacitance Characteristics

Figure 7: Gate-Charge Characteristics

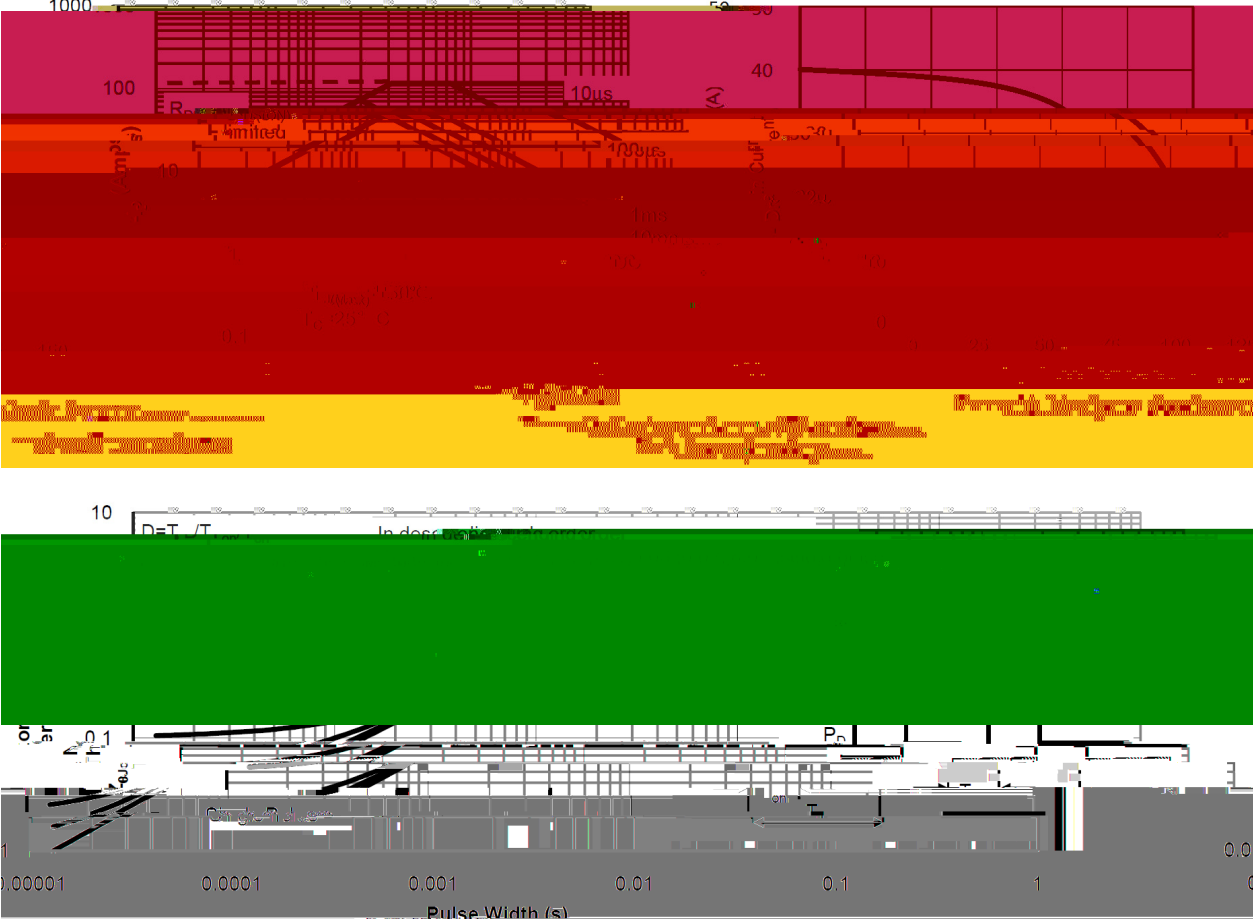
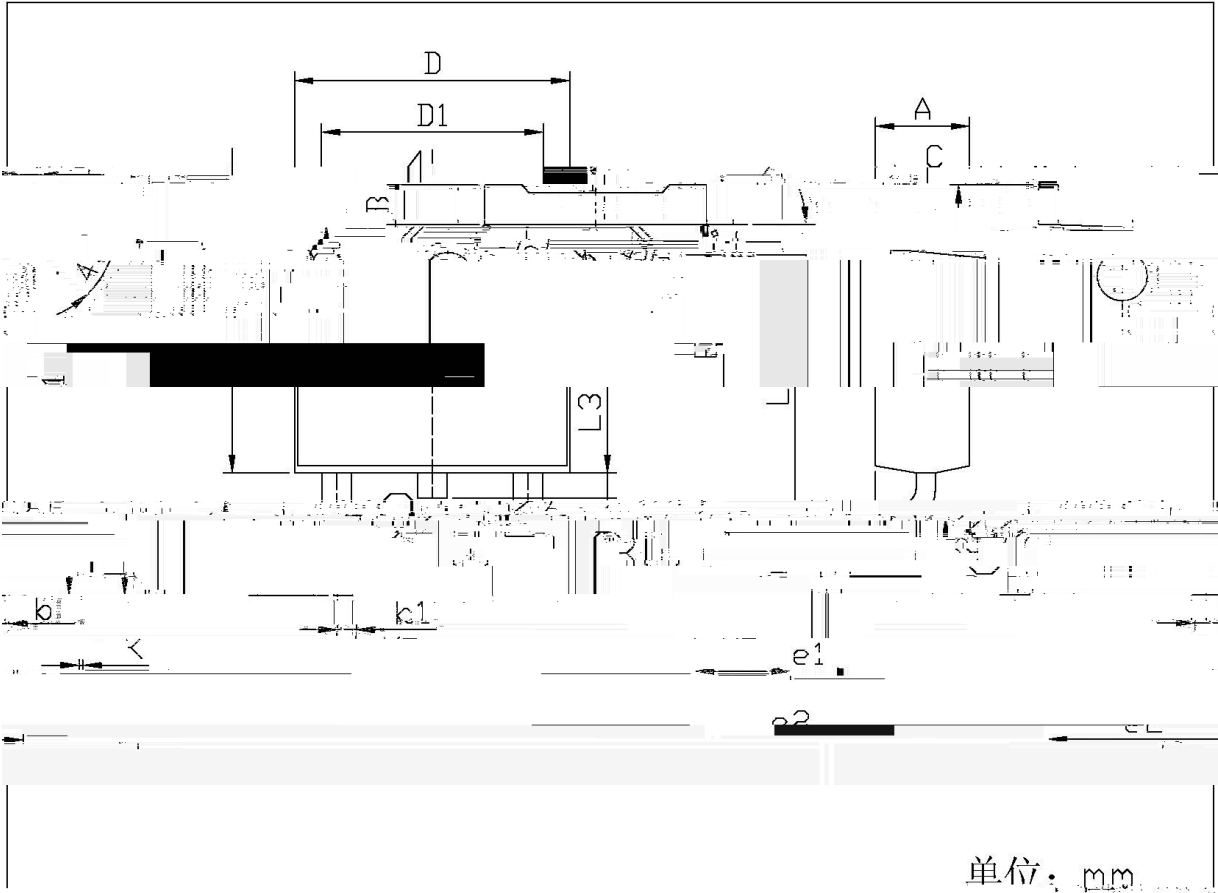


Figure 9: Power Dissipation Characteristics

Figure 10: Thermal Resistance Characteristics

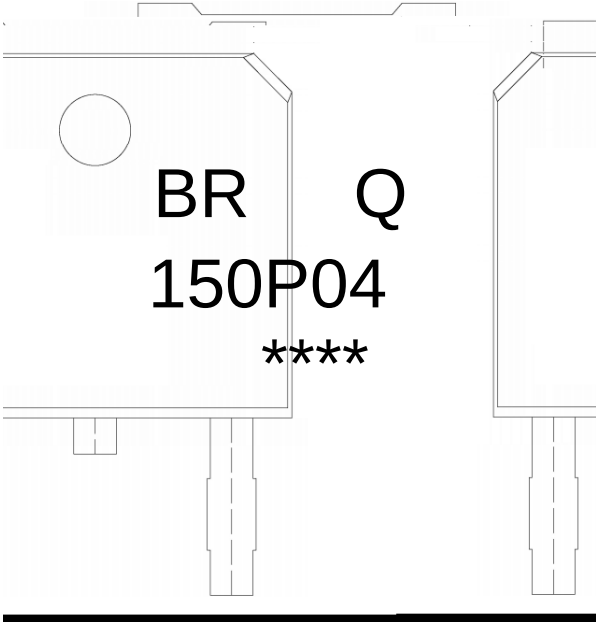
Ø □ =) ¢ / Package Dimensions



Dimensions		In Millimeter		Dimensions		In Millimeter	
Symbol	Min	Max	Symbol	Min	Max	Symbol	Min
B	0.95	1.25	e1	2.24	2.34		
b	0.70	0.90		1.42	1.73		
k1	0.45	0.55	h	0.60	0.85		
	0.47	0.55		1.70	2.00		
D1	5.10	5.50		0.00	0.10		

TO-252

, M y f / Marking Instructions



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BR y	, [W A
Q y	V ñ —) í D } ö œ
150P04 y	° Z W A
y	ÿ D Z W A k š Ÿ D Z J
Note:	
BR:	Company Code
Q:	Automobile halogen-free product Code
150P04:	Product Type Code.
****:	Lot No. Code, code change with Lot No

BRCS150P04DPQ

Rev.A Mar.-2023



DATA SHEET