

/ Descriptions

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

/ Features

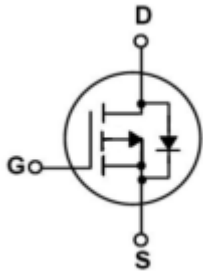
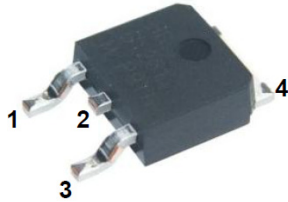
$R_{DS(on)}$ C_{rss}

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

/ 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.

/ Equivalent Circuit**/ Pinning**

PIN1 G PIN 2 D PIN 3 S PIN 4 D

/ h_{FE} Classifications & Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-100	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	-30	A
Drain Current	$I_D(T_C=100^\circ\text{C})$	-21.5	A
Drain Current - Pulsed ^C	I_{DM}	-80	A
Gate-Source Voltage	V_{GS}	± 20	V
Avalanche Current ^C	I_{AS}	-27.0	A
Avalanche energy $L=0.5\text{mH}$ ^C	E_{AS}	291.6	mJ
Power Dissipation ^B	$P_D(T_C=25^\circ\text{C})$	53.5	W
	$P_D(T_C=100^\circ\text{C})$	26.5	W
Power Dissipation ^A	$P_{DSM}(T_A=25^\circ\text{C})$	2.5	W
	$P_{DSM}(T_A=70^\circ\text{C})$	1.6	W
Junction and Storage Temperature Range	$T_j \quad T_{stg}$	-55 150	$^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V \quad I_D=-250\mu A$	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V \quad V_{GS}=0V$			-1.0	μA
		$V_{DS}=-100V \quad V_{GS}=0V \quad T_J=55^\circ\text{C}$			-5.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V \quad V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS} \quad I_D=250\mu A$	-1	-1.7	-3	V
Static Drain-Source On-Resistance	$R_{DS(on)1}$	$V_{GS}=-10V \quad I_D=-30A$		46	50	m Ω
	$R_{DS(on)2}$	$V_{GS}=-4.5V \quad I_D=-15A$		49	51	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-10V \quad I_D=-10A$		25		S
Diode Forward Voltage	V_{SD}	$I_S=-30A \quad V_{GS}=0V$		-0.72	-1.3	V

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$		5110		pF
Output Capacitance	C_{oss}			198		
Reverse Transfer Capacitance	C_{rss}			131		
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$		3.87		Ω
Total Gate Charge	$Q_g(10V)$	$V_{GS}=-10V$ $V_{DS}=-50V$ $I_D=-20A$		16.5	25	nC
Total Gate Charge	$Q_g(4.5V)$			7	12	
Gate Source Charge	Q_{gs}			4.5		
Gate Drain Charge	Q_{gd}			2.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V$ $V_{DS}=-50V$ $R_L=2.5\Omega$ $R_{GEN}=23\Omega$		7		ns
Turn-On Rise Time	t_r			8		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			3		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-20A$ $dI/dt=500A/ms$		30		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-20A$ $dI/dt=500A/ms$		145		nC
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	t				

/ Electrical Characteristic Curve

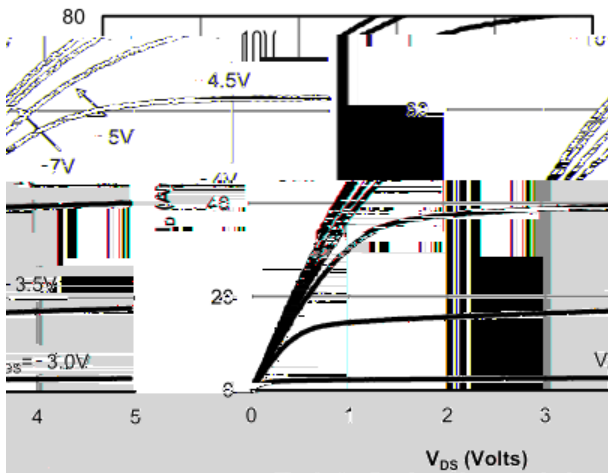


Fig 1: On-Region Characteristics

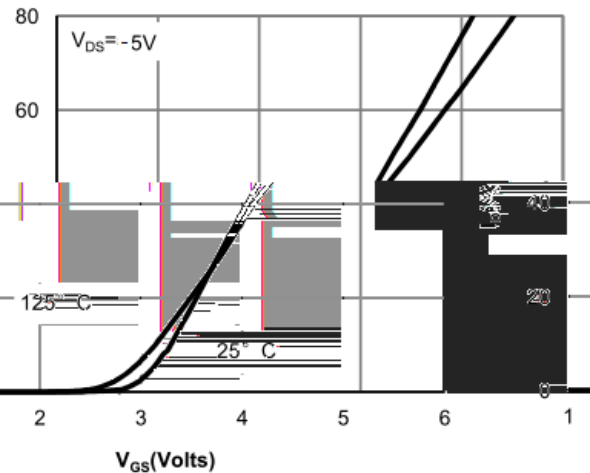
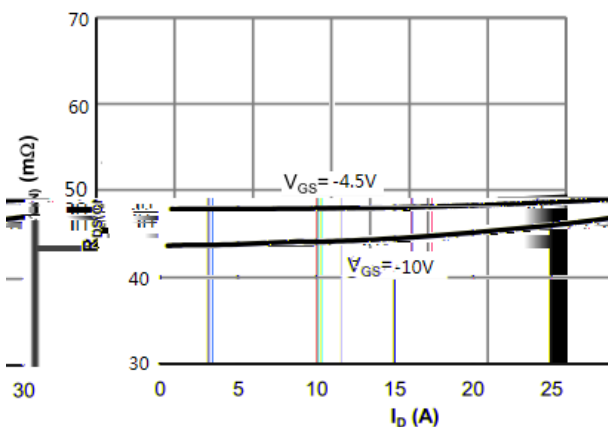


Figure 2: Transfer Characteristics



Gate

Figure 3: On-Resistance vs. Drain Current and On-Resistance vs. Junction Temperature

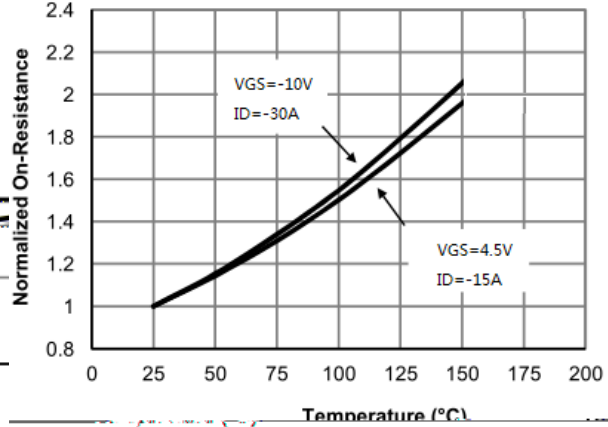


Figure 4

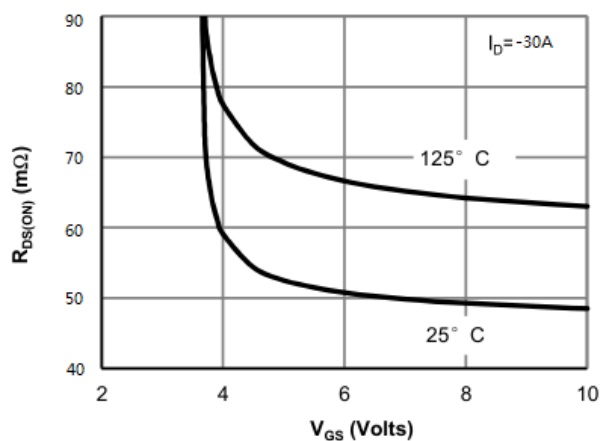


Figure 5: On-Resistance vs. Gate-Source Voltage

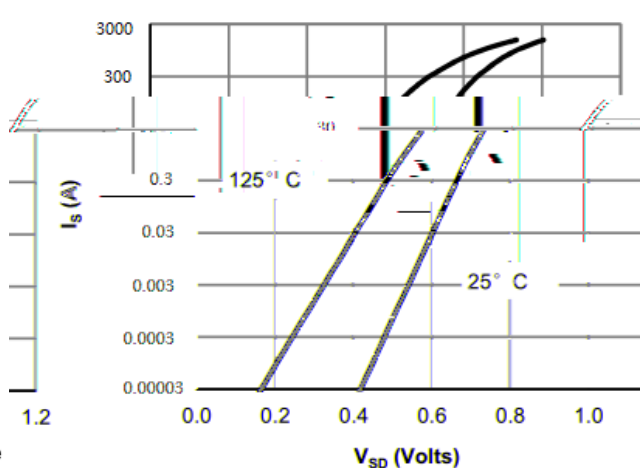


Figure 6: Body-Diode Characteristics

/ Electrical Characteristic Curve

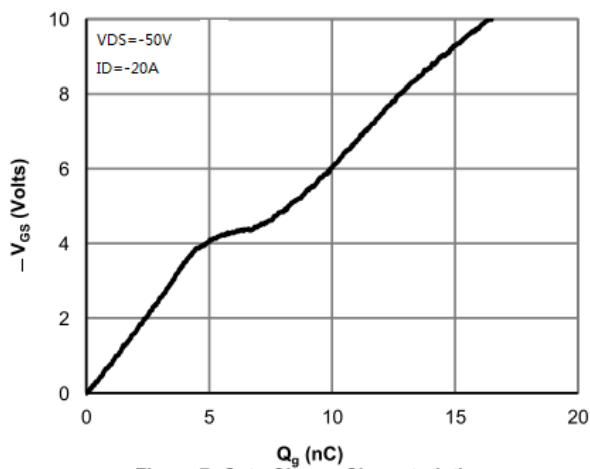


Figure 7: Gate-Charge Characteristics

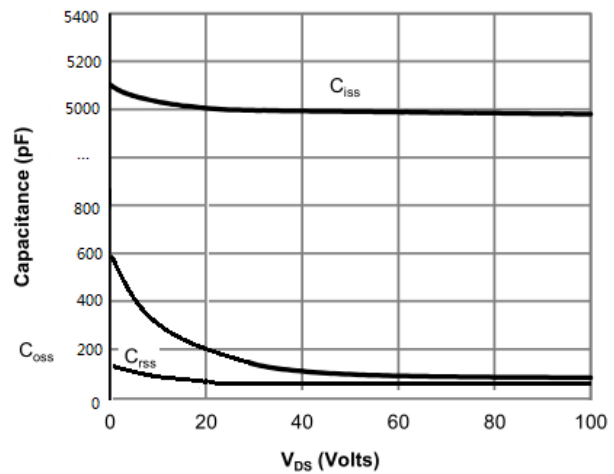


Figure 8: Capacitance Characteristics

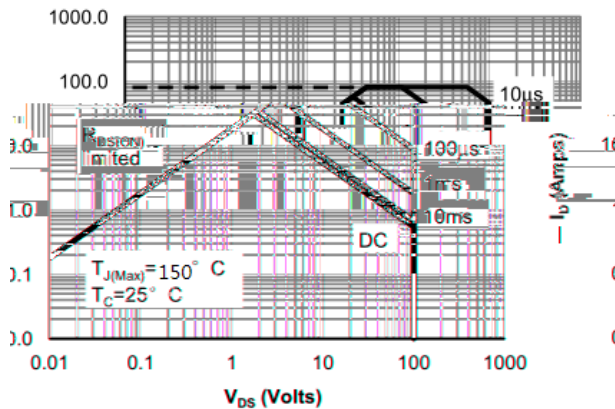
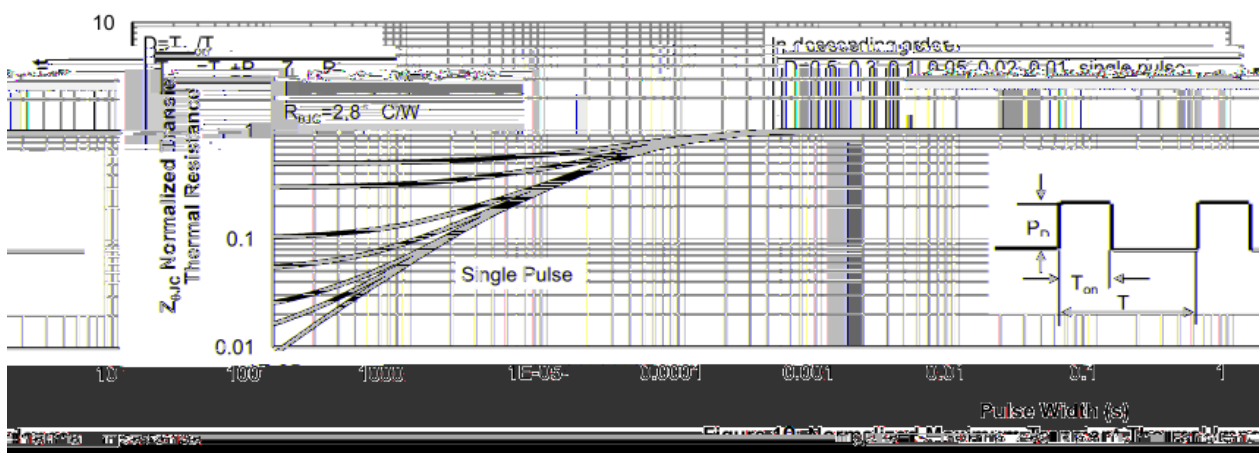
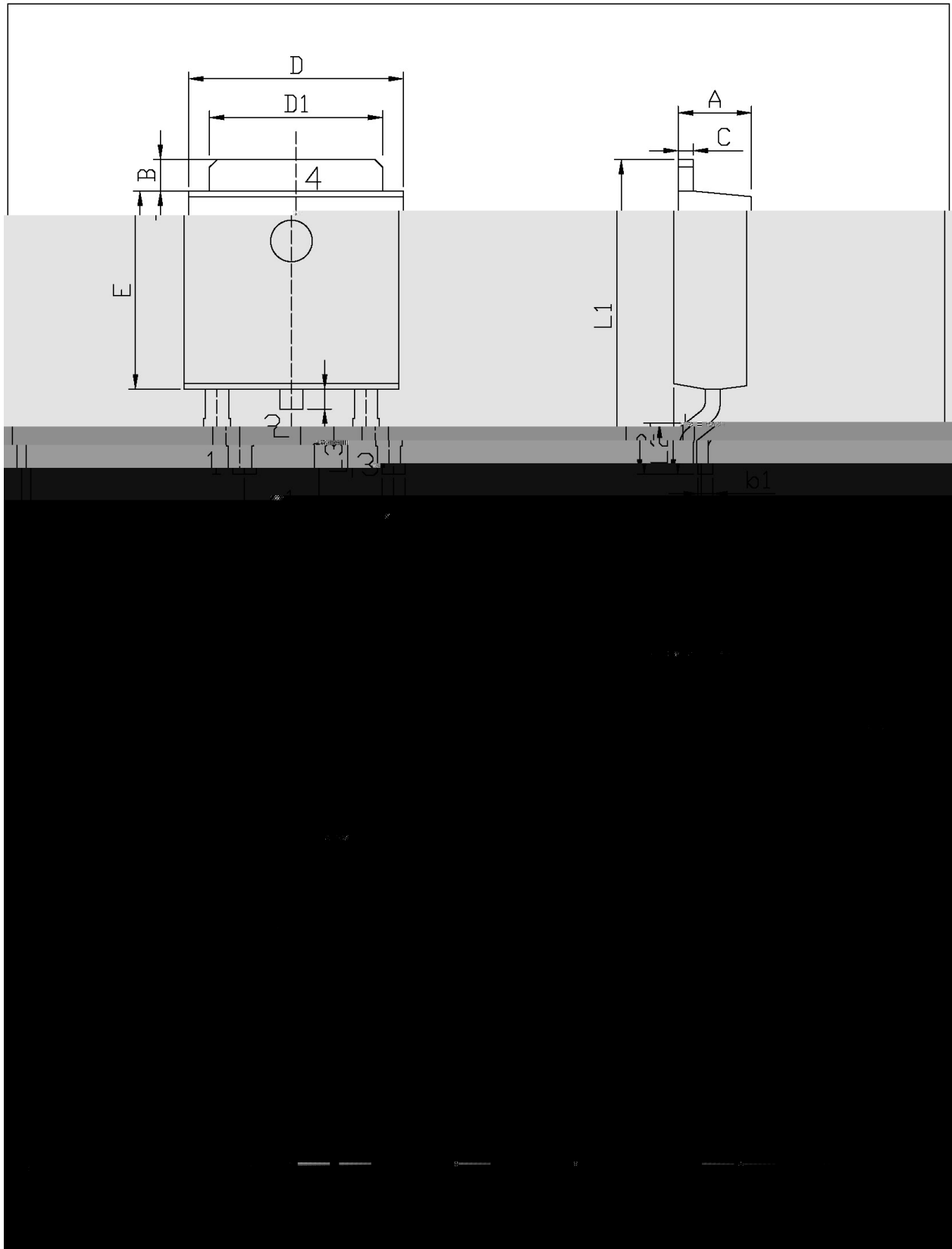


Figure 9: Maximum Forward Biased Safe Operating Area

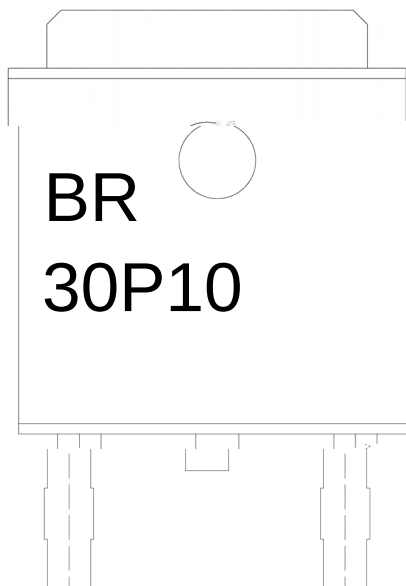




/ Package Dimensions



/ Marking Instructions



BR

30P10

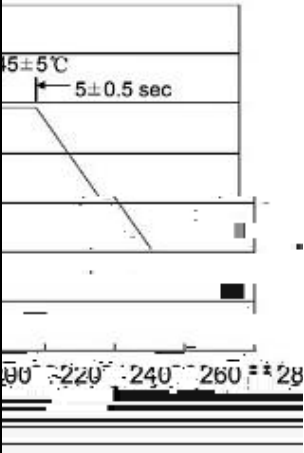
Note:

BR: Company Code

30P10: Product Type Code.

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

ing(Pb-Free)



30 , Time:60~90sec.
5 , Duration:5±0.5sec.
~10 /sec.

Time:10±1 sec

Dimension 包装尺寸 (unit: mm ³)	
盒	箱