Descriptions

This 20A, 60V P-Channel MOSFET in a TO-252 Plastic Package.

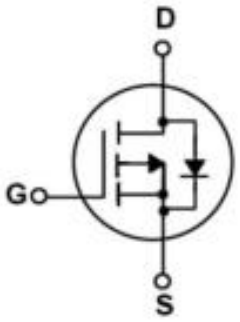
Features

- High Current Capability
- Halogen-free Product

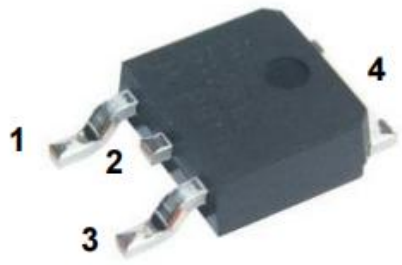
Applications

AC-in load switch,Battery protection charge/discharge.

Equivalent Circuit



Pinning



PIN1：Gate PIN 2：Drain PIN 3：Source PIN 4：Drain

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	-60	V
Drain Current		I_D(Tc=25℃)	-20	A
Drain Current - Pulsed		I_{DM}	-80	A
Gate-Source Voltage		V_{GS}	±20	V
Avalanche Current		I_{AS}	13.8	A
Avalanche energy L=0.5mH		E_{AS}	65	mJ
Power Dissipation		P_D(Tc=25℃)	20	W
		P_D(Tc=100℃)	10	W
Junction and Storage Temperature Range		T_j, T_{stg}	-55～150	℃
Maximum Junction-to-Ambient	t ≤ 10s	$R_{\theta JA}$	30	℃/W
Maximum Junction-to-Ambient	Steady-State		60	
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	7.5	

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-60	-70		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V V_{GS}=0V			-1.0	μA
		V_{DS}=-60V V_{GS}=0V T_J=55°C			-5.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	-1	-1.7	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)1}$	V_{GS}=-10V I_D=-20A		87	92	mΩ
	$R_{DS(on)2}$	V_{GS}=-4.5V I_D=-10A		98	102	mΩ
Diode Forward Voltage	V_{SD}	I_S=-1A V_{GS}=0V		-0.7	-1.2	V

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{DS}=-25V V_{GS}=0V f=1.0MHz		1650		pF
Output Capacitance	C_{oss}			330		
Reverse Transfer Capacitance	C_{rss}			205		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz		6.4		Ω
Total Gate Charge	Q_g(10V)	V_{GS}=-10V V_{DS}=-30V I_D=-12A		7.5		nC
Total Gate Charge	Q_g(4.5V)			3.8		
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			1.9		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-10V V_{DS}=-30V R_L=2.5Ω R_{GEN}=3Ω		4.2		ns
Turn-On Rise Time	t_r			3.4		
Turn-Off Delay Time	$t_{d(off)}$			16		
Turn-Off Fall Time	t_f			2		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-12A dI/dt=500A/ms		27		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-12A dI/dt=500A/ms		30		nC

Electrical Characteristic Curve

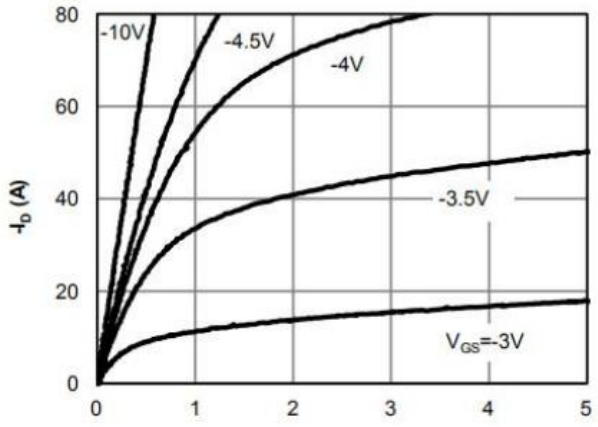
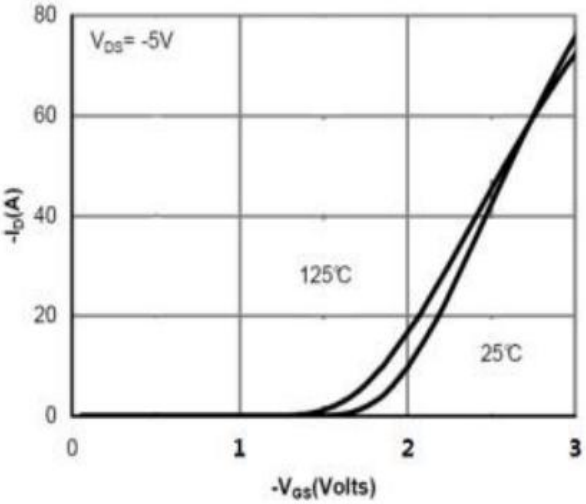


Figure 1: On-Region Characteristics



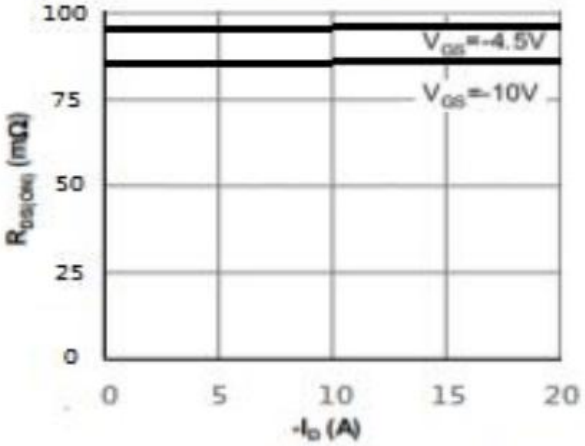


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

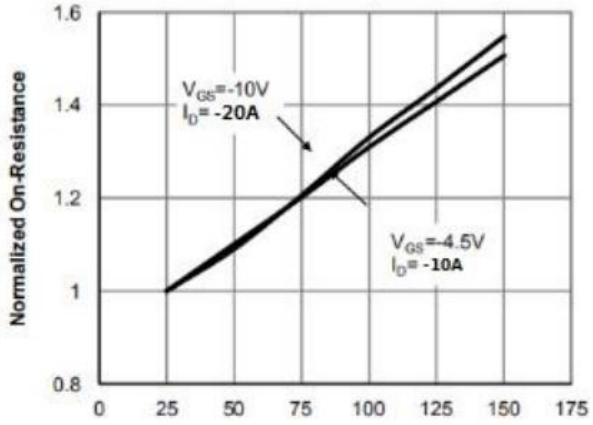


Figure 4: On-Resistance vs. Junction Temperature

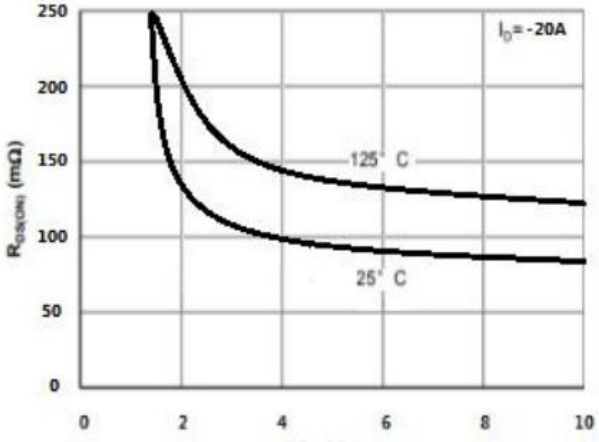


Figure 5: On-Resistance vs. Gate-Source Voltage

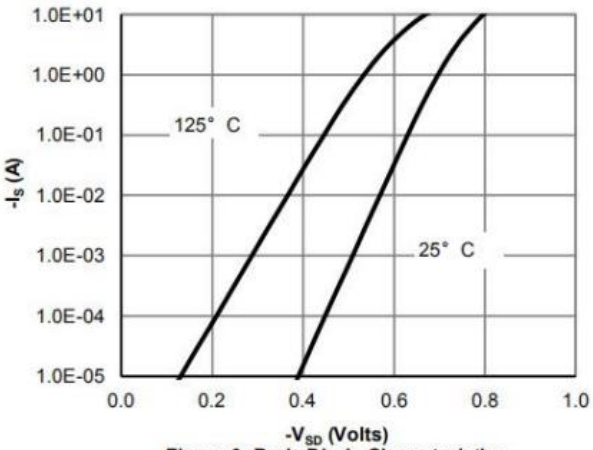


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

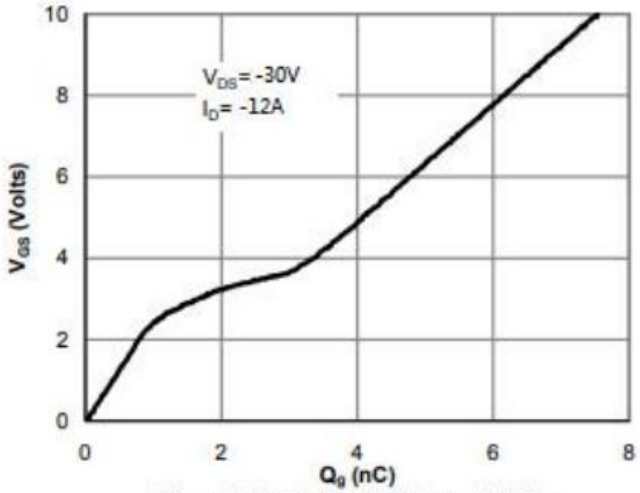


Figure 7: Gate-Charge Characteristics

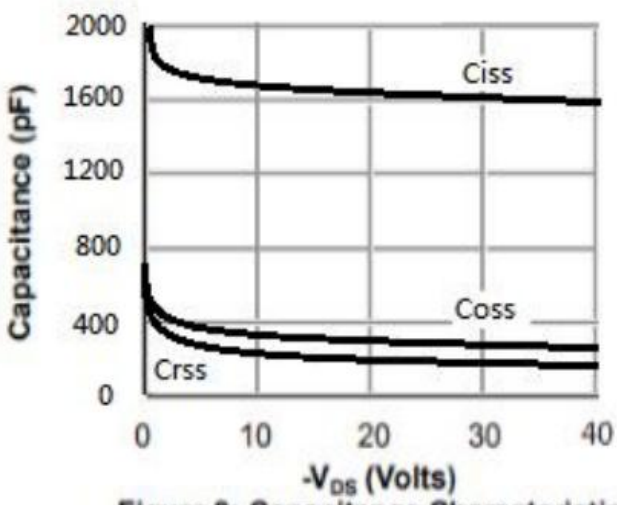


Figure 8: Capacitance Characteristics

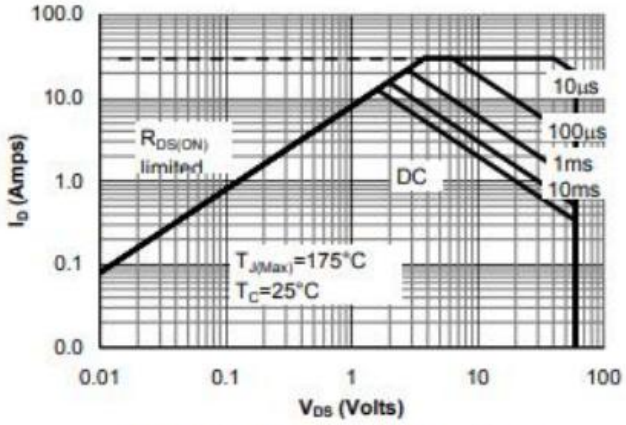


Figure 9: Maximum Forward Biased Safe Operating Area

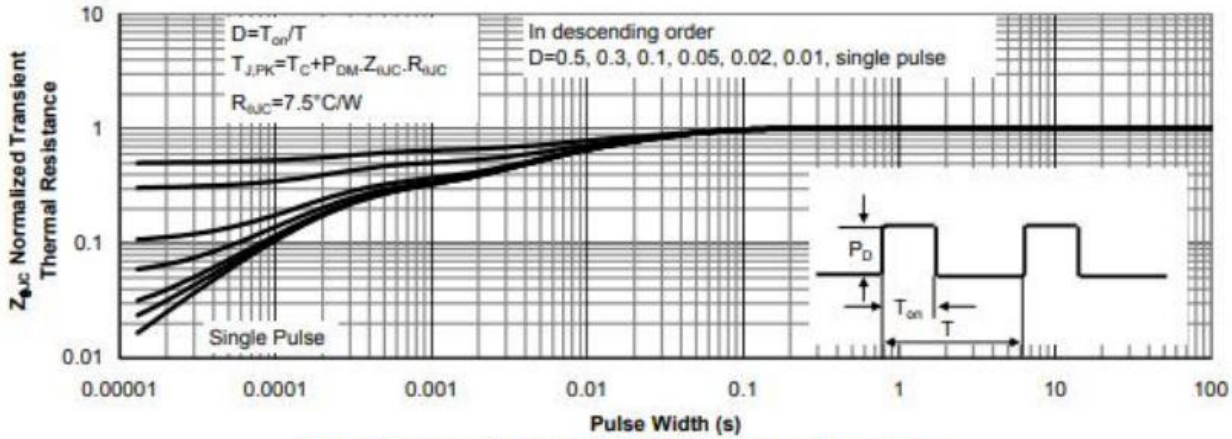
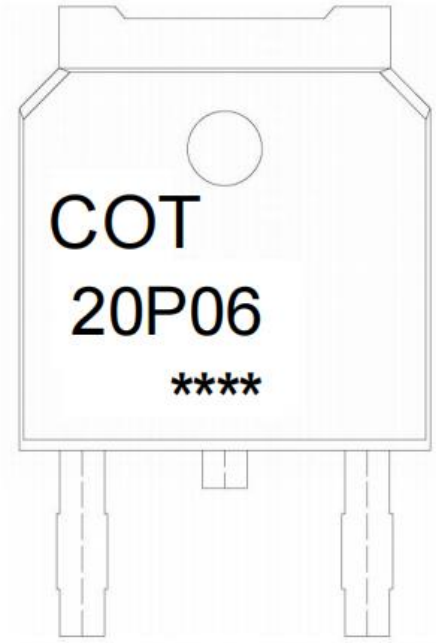


Figure 10 : Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Logo

06PR092: Product Type.

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

Packaging SPEC

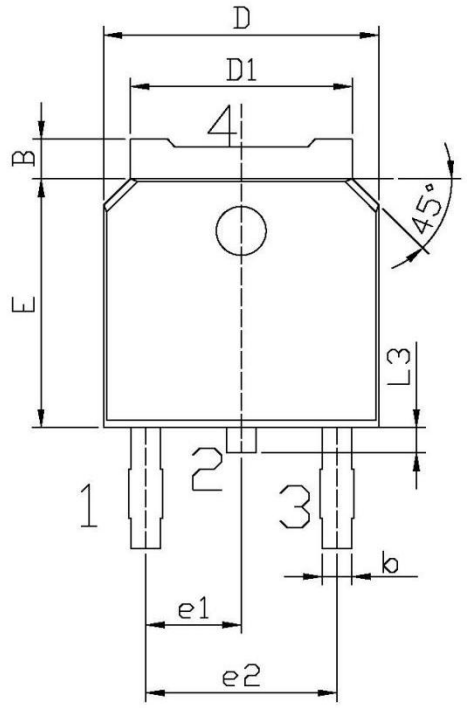
REEL INFORMATION

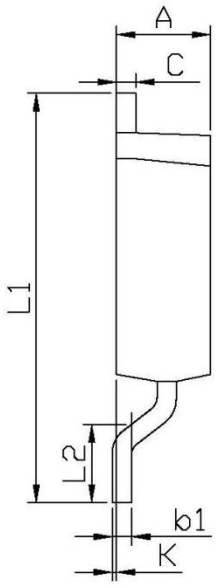
Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13″ ×16	360×360×50	380×335×366

TUBE INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

Package Outline Dimensions





单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252