

20V P-Channel MOSFET
Product Summary

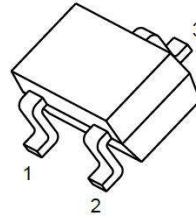
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	17mΩ@-10V	-7A
	22mΩ@-4.5V	

Features

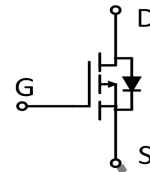
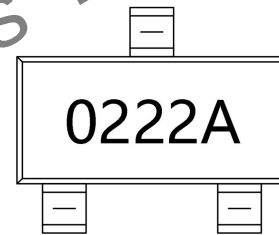
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

Applications

- PWM Application
- Load Switch
- Power Management

SOT-23-3L


PIN1:GATE
PIN2:SOURCE
PIN3:DRAIN

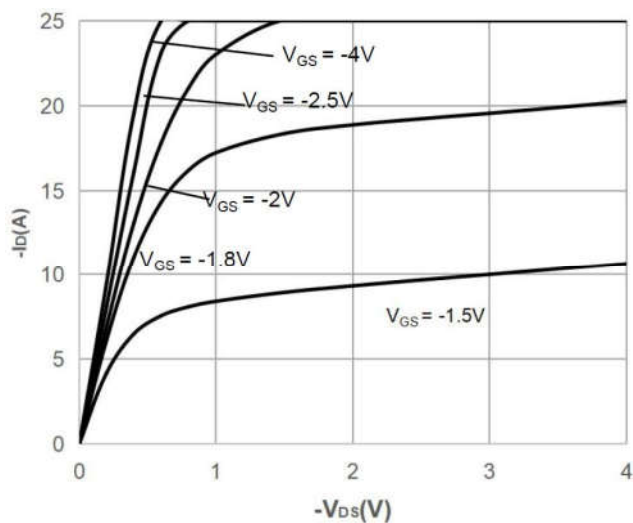
Schematic diagram

Marking

Absolute Maximum rating ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current	$T_C = 25^\circ\text{C}$	I_D	-7	A
	$T_C = 100^\circ\text{C}$		-5	A
Drain Current - Pulsed		I_{DM}	-28	A
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	2	W
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

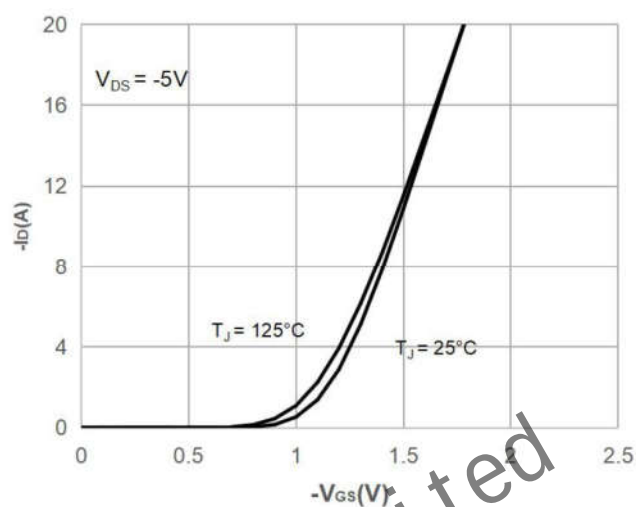
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V			-1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.65	-1	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -5A		17	23	mΩ
		V _{GS} = -2.5V, I _D = -3A		22	30	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f= 1.0MHz		1332		pF
Output Capacitance	C _{oss}			184		
Reverse Transfer Capacitance	C _{rss}			160		
Switching Characteristics						
Total Gate Charge	Q _g	V _{GS} = -4.5V, V _{DS} = -10V, I _D = -3A		15		nC
Gate-source Charge	Q _{gs}			2.2		
Gate-drain Charge	Q _{gd}			4.4		
Turn-on Delay Time	t _{d(on)}	V _{GS} = -4.5V, V _{DS} = -10V, I _D = -7A, R _{GEN} = 2.5Ω		10		ns
Turn-on Rise Time	t _r			30		
Turn-off Delay Time	t _{d(off)}			28		
Turn-off Fall Time	t _f			8		
Source - Drain Diode Characteristics						
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _{SD} =-5A,T _J = 25℃			-1.2	V

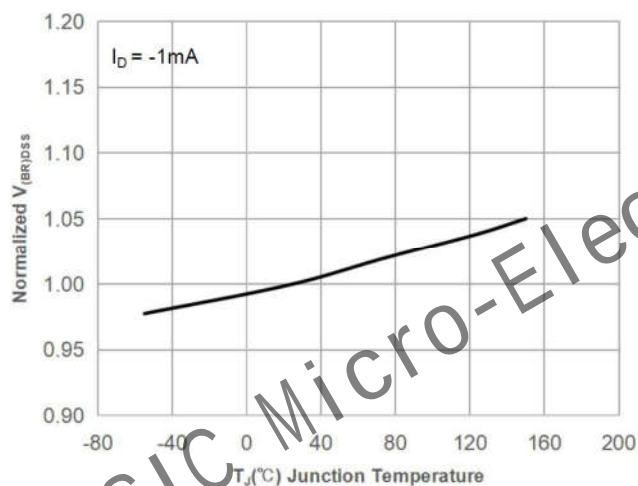
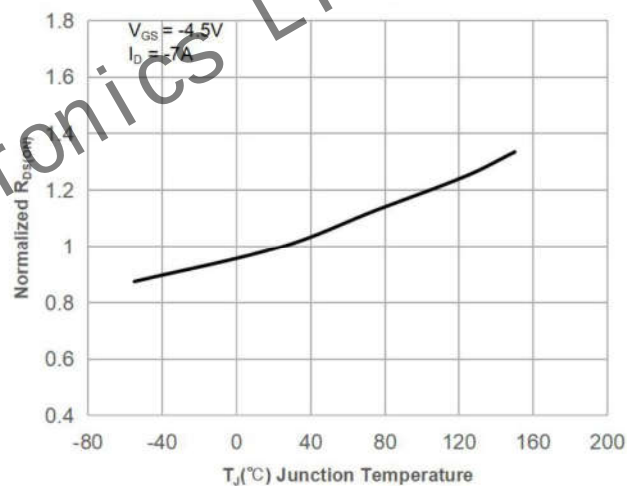
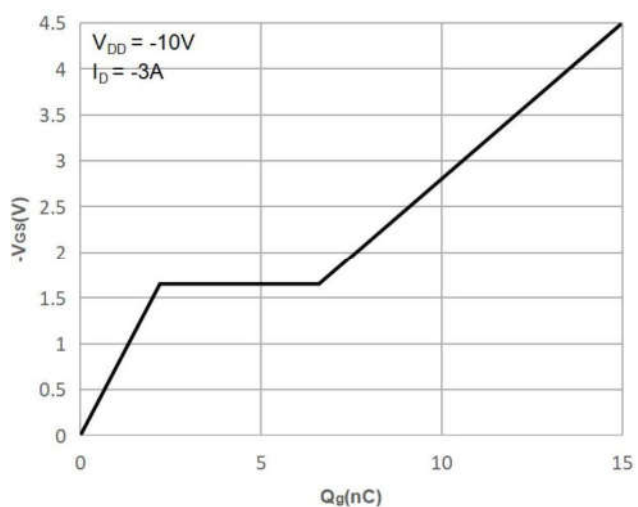
Typical Characteristic



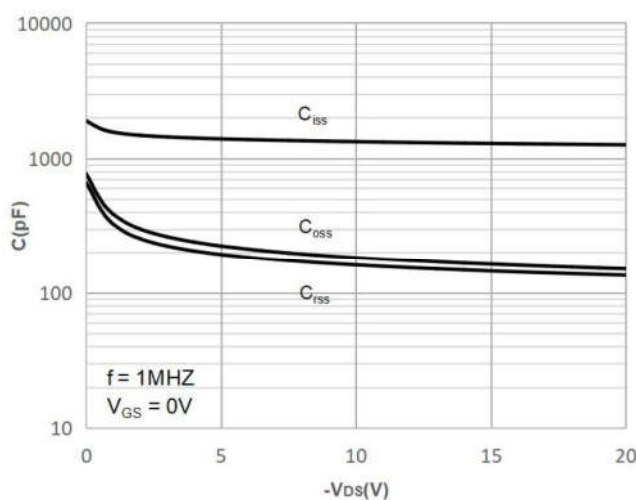
Output Characteristics



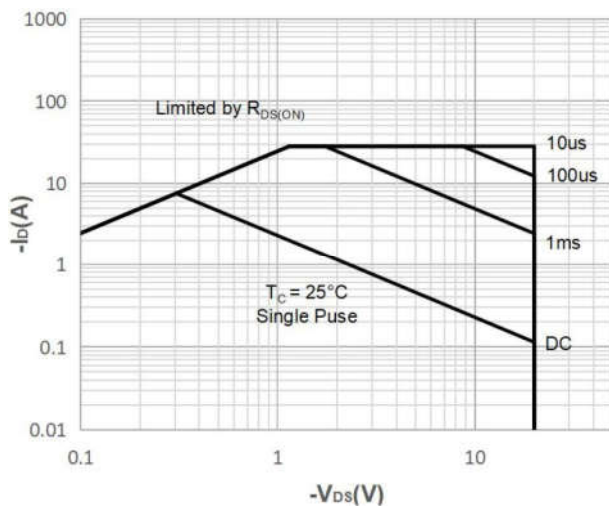
Transfer Characteristics


 BV_{DS} vs Junction Temperature

 $R_{DS(ON)}$ vs Junction Temperature


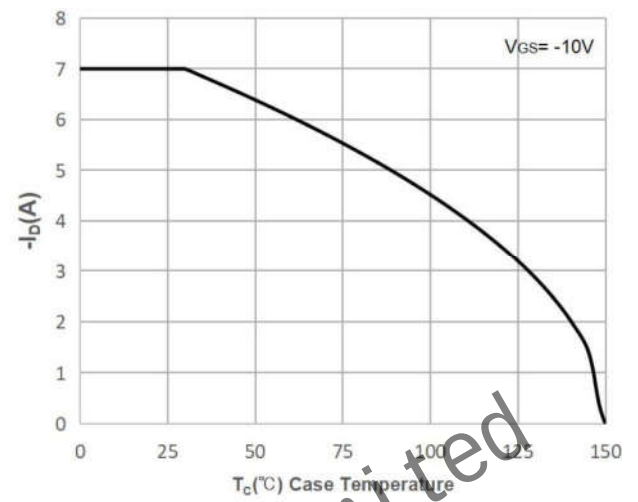
Gate Charge Characteristics



Capacitance Characteristics



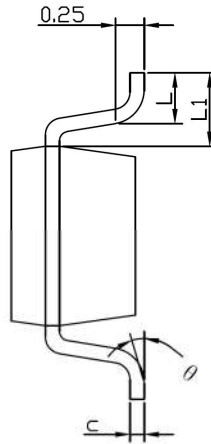
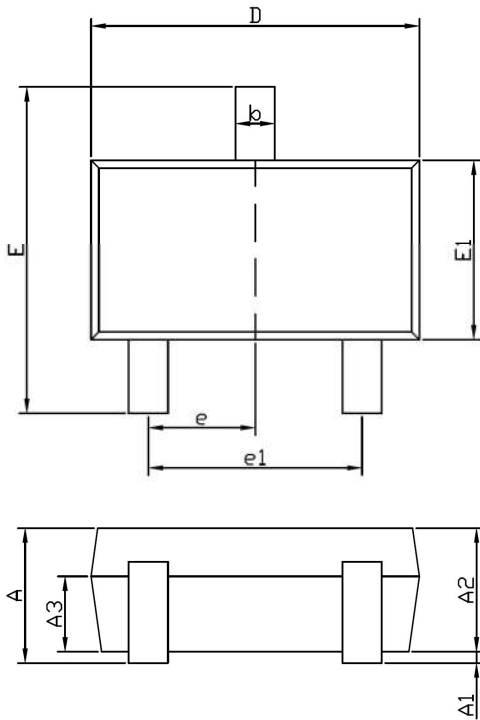
Maximum Safe Operating Area



Drain Current

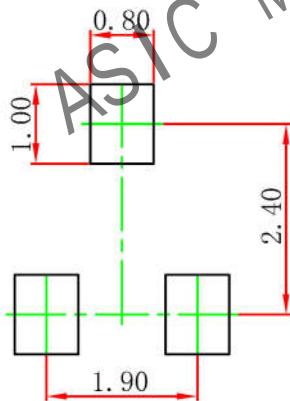
Dimension

SOT-23-3L



Symbol	Millimeters		
	Min.	Typ.	Max.
A			1.25
A1	0.01		0.08
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.33		0.41
c	0.11		0.20
D	2.82	2.92	3.02
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.90	0.95	1.00
e1	1.90BSC		
L	0.30		0.60
L1	0.55	0.60	0.70
θ	0°		8°

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm