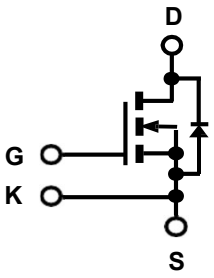
ICE22M230WP4
Silicon Carbide Power MOSFET

Product Summary			
I_D	T_A=25°C	90A	Max
$V_{(BR)DSS}$	T_C=25°C	2300V	Min
$r_{DS(on)}$	V_{GS}=18V	22mΩ	Typ
Q_g	V_{DS}=1500V	200nC	Typ

Features

- 2300V 22mohm SiC MOSFET
- High blocking voltage with low on-resistance
- High-speed switching with low capacitances
- Fast Reverse Recovery
- Optimized design for high performance power systems





TO247 Plus -4L
1: D, 2: S,
3: K, 4: G

RoHS COMPLIANT
RoHS (EU) 2015/863

CE

HALOGEN FREE

Lead Free

Maximum ratings [a] , at T_j=25°C, unless otherwise specified

Parameter	*Symbol*	*Conditions*	*Value*	*Unit*
Continuous drain current	I_D	T_c=25°C	90	A
		T_c=100°C	64	
Pulsed drain current	$I_{D,\ pulse}$		204	A
Maximum gate source voltage	$V_{GS(max)}$		-10/+22	V
Operational gate source voltage	$V_{GS\ op}$		-5/+18	V
Power dissipation	P_{tot}	T_c=25°C	517	W
		T_c=100°C	258	
Storage temperature	T_{stg}		-55 to +175	°C
Operating temperature	T_j			

a Pulse width limited by Tjmax

Parameter	Symbol	Conditions	Values			Unit
			Min	Typ	Max	
Thermal characteristics						
Thermal resistance, junction-case	R_{thJC}		-	-	0.29	°C/W
Soldering temperature, wave soldering only allowed at leads	T_{sold}	1.6mm (0.063in.) from case for 10 s	-	-	260	°C
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V	2300	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=22mA, T_j=25°C	2	3.0	4	V
		V_{DS}=V_{GS}, I_D=22mA, T_j=175°C	-	2.2	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=2300V, V_{GS}=0V, T_j=25°C	-	0.2	50	µA
		V_{DS}=2300V, V_{GS}=0V, T_j=175°C	-	1	-	µA
Gate source leakage current	I_{GSS}	V_{GS}=-10/+22V, V_{DS}=0V	-	-	±100	nA
Drain-source on-state resistance	$R_{DS\ (on)}$	V_{GS}=18V, I_D=100A, T_j=25°C	-	22	28.5	mΩ
		V_{GS}=18V, I_D=100A, T_j=175°C	-	50	-	mΩ
Gate resistance	R_G	f=1 MHz, V_{AC}=30mV	-	1	-	Ω
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS}=1500V, V_{GS}=0V, f=100 kHz, V_{AC}=30mV	-	5000	-	pF
Output capacitance	C_{oss}		-	120	-	pF
Reverse transfer capacitance	C_{rss}		-	7	-	pF
C_{OSS} stored energy	E_{oss}		-	130	-	µJ
Forward transconductance	g_{FS}	V_{DS}=20V, I_D=100A	-	67	-	S

Electrical characteristics [a], at T_j=25°C, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			Min	Typ	Max	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DS}=1500V, I_D=100A, V_{GS}=-5 to +18V	-	60	-	nC
Gate to drain charge	Q_{gd}		-	34	-	
Gate charge total	Q_g		-	200	-	
Reverse Diode						
Continuous forward current	I_S	V_{GS}=-5V	-	-	90	A
Diode forward voltage	V_{SD}	V_{GS}=-5V, I_{SD}=50A, T_j=25°C	-	4.3	-	V
		V_{GS}=-5V, I_{SD}=50A, T_j=175°C	-	3.8	-	

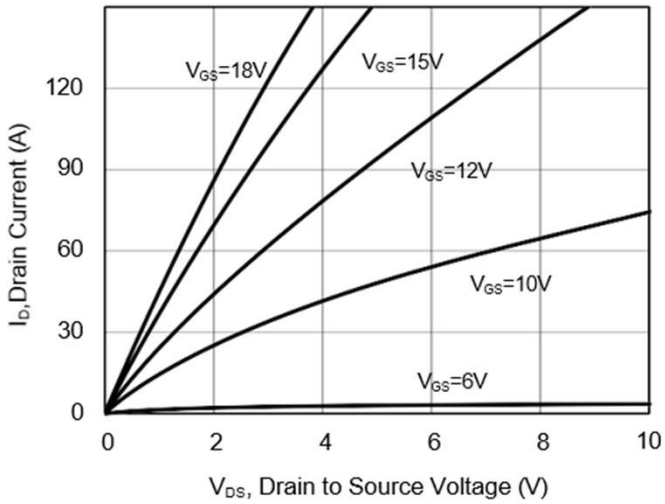


Fig 1. Output Characteristics, T_j=25°C

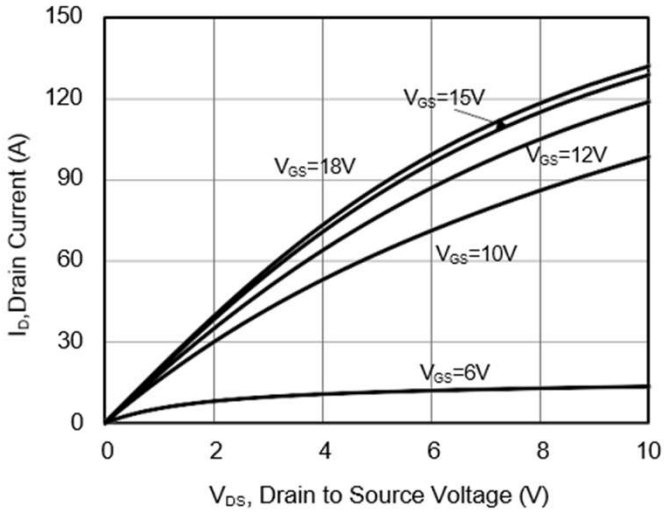


Fig 2. Output Characteristics, T_j=175°C

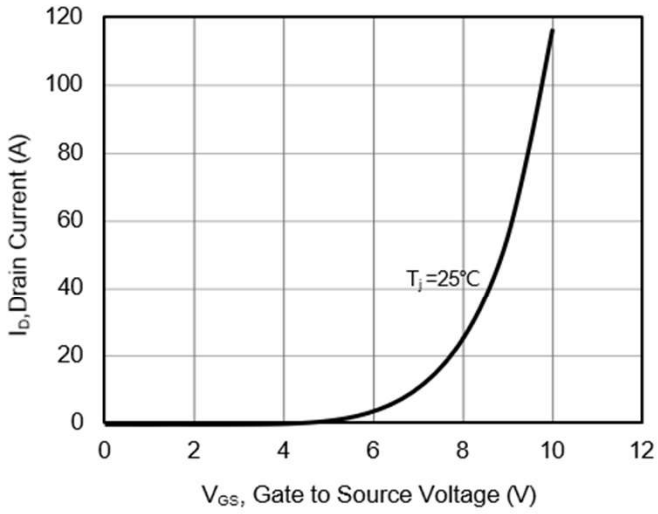


Fig 3. Transfer Characteristics

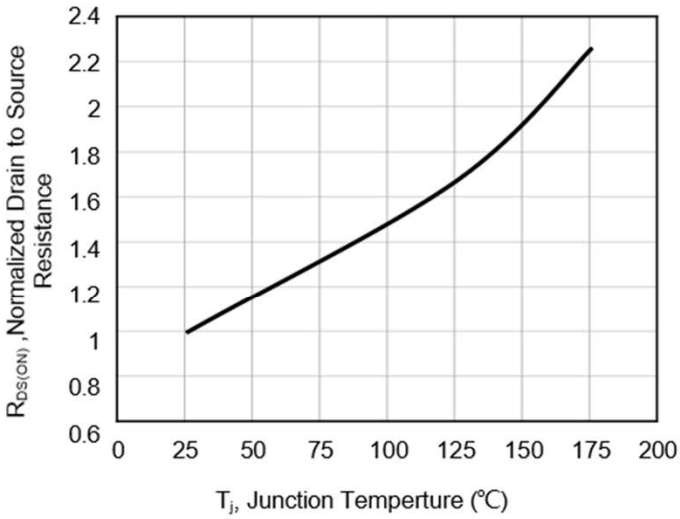


Fig 4. On−Resistance Variation vs. Temperature

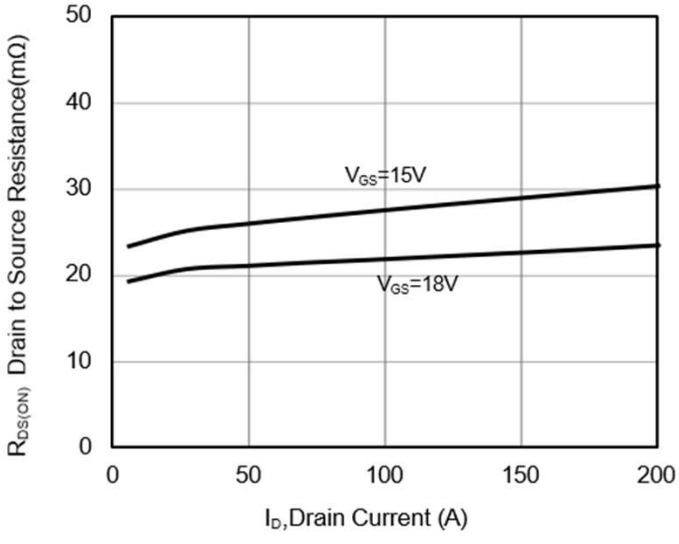


Fig 5. On-Resistance vs. I_D

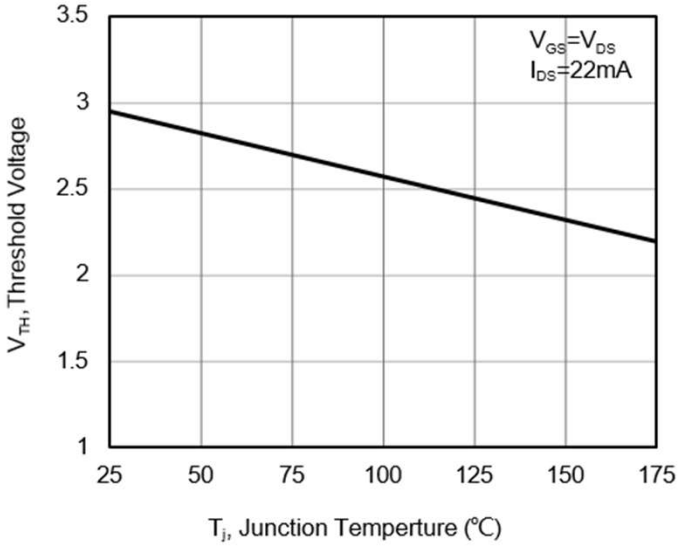


Fig 6. Gate Threshold vs. Temperature

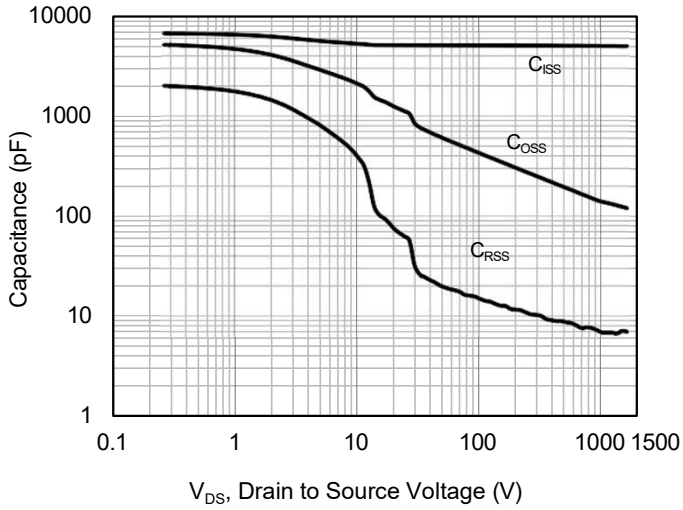


Fig 7. Capacitance Characteristics

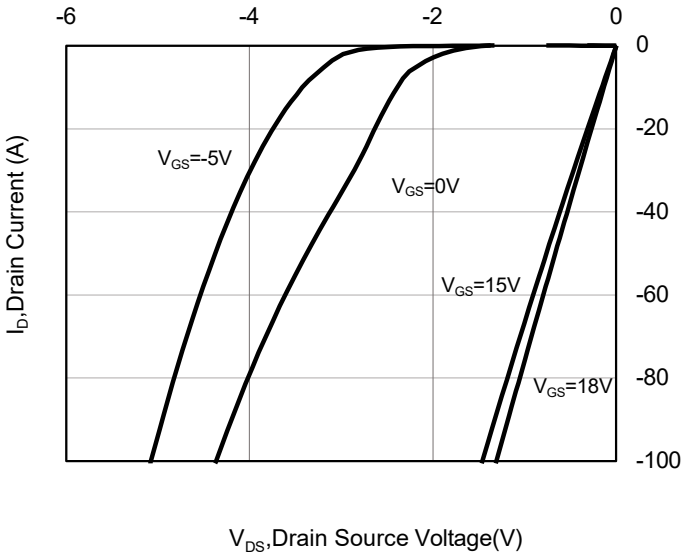


Fig 8. 3rd Quadrant Characteristic at 25 ºC

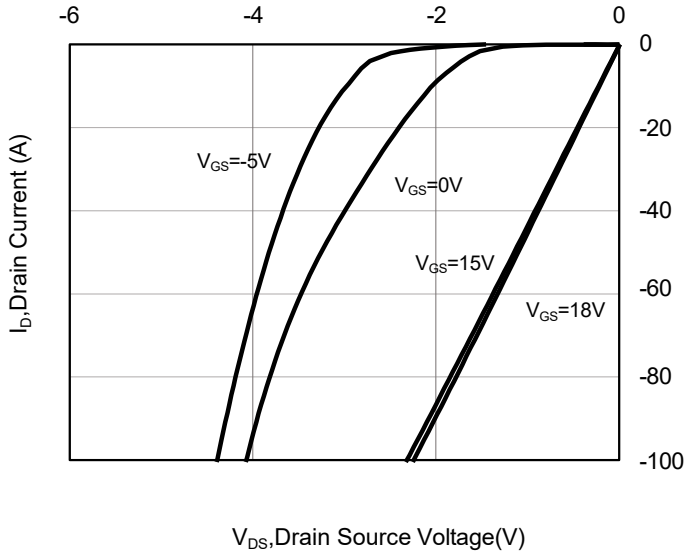
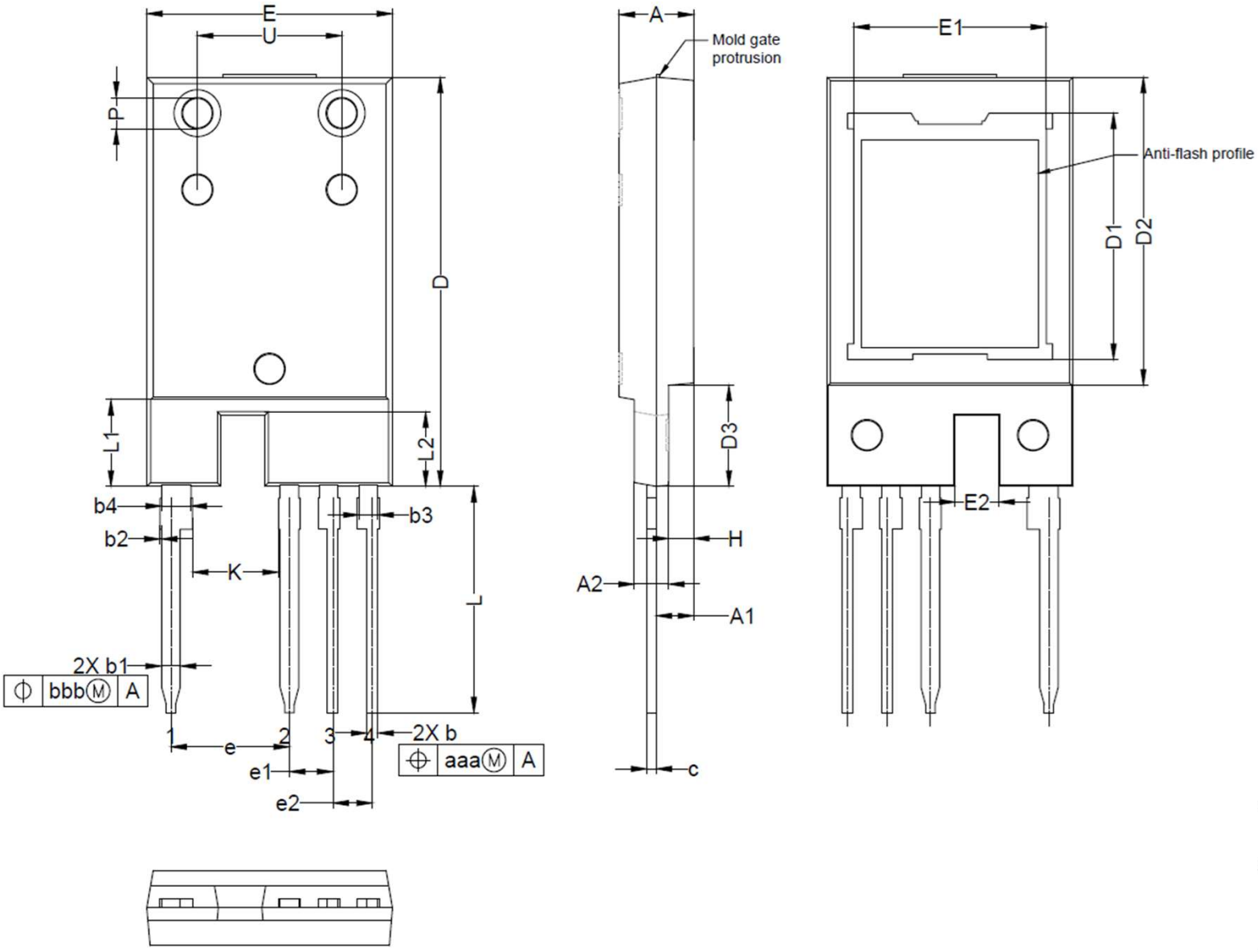


Fig 9. 3rd Quadrant Characteristic at 175 ºC

Package Outline: TO-247 Plus -4L



Package Outline: TO-247 Plus -4L

SYMBOL	MILLIMETERS		SYMBOL	MILLIMETERS	
	MIN	MAX		MIN	MAX
A	4.70	4.90	E1	12.00	12.80
A1	2.16	2.66	E2	2.60	3.00
A2	2.00	2.40	e	7.62 BSC.	
b	0.60	0.80	e1	2.79 BSC.	
b1	1.10	1.30	e2	2.54 BSC.	
b2	-	0.15	H	1.51	1.71
b3	1.10	1.30	K	5.50	-
b4	1.70	2.10	N	4	
c	0.50	0.70	L	14.48	14.68
D	26.23	26.43	L1	5.40	5.70
D1	15.50	16.30	L2	4.46	4.66
D2	19.40	20.20	P	1.75	2.25
D3	6.35	6.65	U	9.00	9.50
E	15.70	15.90	aaa	0.25	
			bbb	0.25	

Marking Information

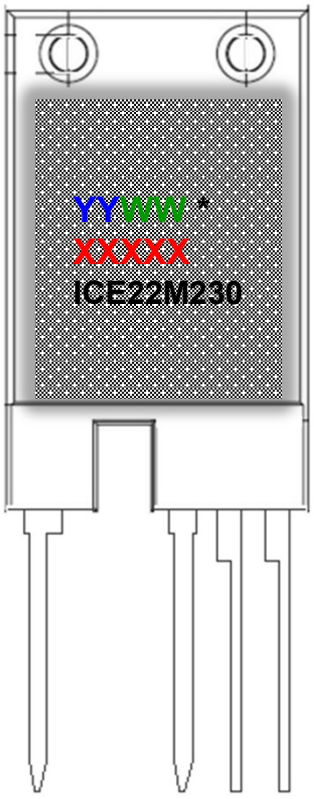
YY = Last two digits of the year

WW = Work week

* = Site ID

XXXXX = Lot ID

ICE22M230 = ICE is IceMOS logo and 22M230 is a designated device part number



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