IceMOS Technology

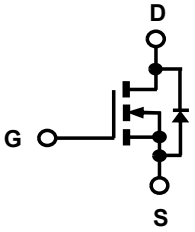
Preliminary
ICEK072G15LK

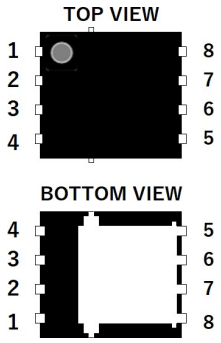
ICEK072G15LK N-Channel Enhancement Mode MOSFET

Product Summary			
I_D	T_A=25°C	104A	Max
$V_{(BR)DSS}$	I_D=250μA	150V	Min
$r_{DS(on)}$	V_{GS}=10V	5.5mΩ	Typ
Q_g	V_{DS}=75V	41nC	Typ

Features

- Very Low $r_{DS(on)}$
- Superior switching loss
- Ultra-fast body diode
- Optimized design for Synchronous Rectification, OR-ing and Hot Swap Switch





DFN5x6

1-3=Source

4=Gate, 5-8=Drain

RoHS COMPLIANT RoHS (EU) 2015/863

CE

HALOGEN FREE

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

Parameter	*Symbol*	*Conditions*	*Value*	*Unit*
Continuous drain current [b]	I_D	T_c=25°C	104	A
		T_c=100°C	73	
Pulsed drain current [b]	$I_{D, pulse}$	T_c=25°C	416	A
Avalanche energy, single pulse	E_{AS}	L=0.5mH, V_{DD}=75V, I_D=43A, R_G=50Ω	462	mJ
Avalanche current, repetitive [b]	I_{AR}	limited by $T_j$max	43	A
Gate source voltage	V_{GS}	Static	±20	V
		AC (f>1Hz)		
Power dissipation	P_{tot}	T_c=25°C	187.5	W
Operating and storage temperature	T_j, T_{stg}		-55 to +175	°C

a Preliminary data sheet - Specifications subject to change.
b limited by Tj_{max}
c when mounted on 1-inch square 2oz copper-clad FR-4

Parameter	Symbol	Conditions	Values			Unit
			Min	Typ	Max	
Thermal characteristics						
Thermal resistance, junction-case	R_{thJC}		-	-	0.8	°C/W
Thermal resistance, junction-ambient [c]	R_{thJA}	leaded	-	-	45	
Soldering temperature, wave soldering only allowed at leads	T_{sold}	1.6mm (0.063in.) from case for 10 s	-	-	260	°C

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

Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	150	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	3	3.8	5	
Zero gate voltage drain current	I_{DSS}	V_{DS}=150V, V_{GS}=0V	-	-	1	μA
Gate source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain-source on-state resistance	$R_{DS\ (on)}$	V_{GS}=10V, I_D=50A	-	5.5	7.2	mΩ
Gate resistance	R_G	f=1 MHz, open drain	-	3.2	-	Ω
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS}=75V, V_{GS}=0V, f=1 MHz	-	3260	-	pF
Output capacitance	C_{oss}		-	1010	-	
Reverse transfer capacitance	C_{rss}		-	22	-	
Turn-on delay time	$t_{d(on)}$	V_{DS}=75V, R_L=1.5Ω, V_{GS}=10V, R_G=3.3Ω (External)	-	17	-	ns
Rise time	t_r		-	87	-	
Turn-off delay time	$t_{d(off)}$		-	23	-	
Fall time	t_f		-	6	-	

Parameter	Symbol	Conditions	Values			Unit
			Min	Typ	Max	
Gate charge characteristics						
Gate to source charge	Q_{gs}	V_{DS}=75V, I_D=50A, V_{GS}=0 to 10V	-	19	-	nC
Gate to drain charge	Q_{gd}		-	10	-	
Gate charge total	Q_g		-	41	-	
Reverse Diode						
Continuous forward current	I_S	V_{GS}=0V	-	-	104	A
Diode forward voltage	V_{SD}	V_{GS}=0V, I_S=50A	-	0.86	-	V
Reverse recovery time	t_{rr}	V_{RR}=75V, I_S=50A, d_{iF}/d_t=100 A/µS	-	78	-	ns
Reverse recovery charge	Q_{rr}		-	183	-	nC
Peak reverse recovery current	I_{rm}		-	3.8	-	A

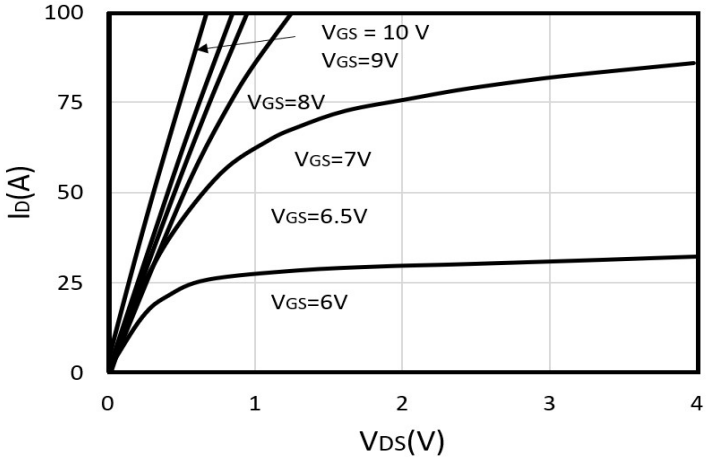


Figure 1: On-Region Characteristics

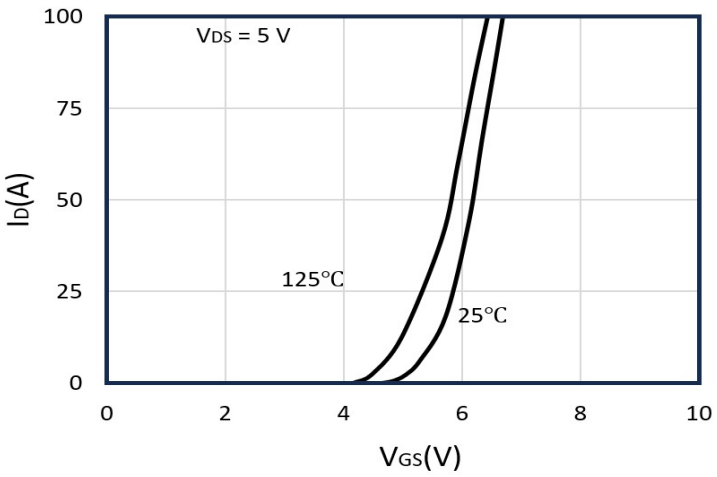


Figure 2: Transfer Characteristic

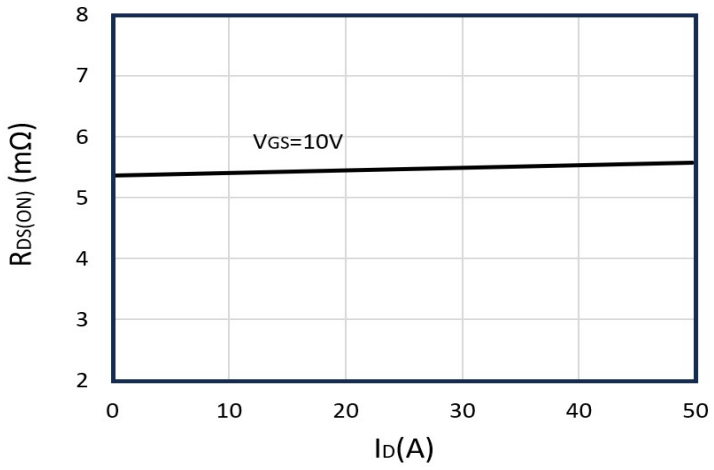


Figure 3: On- Resistance vs. Drain Current and Gate Voltage

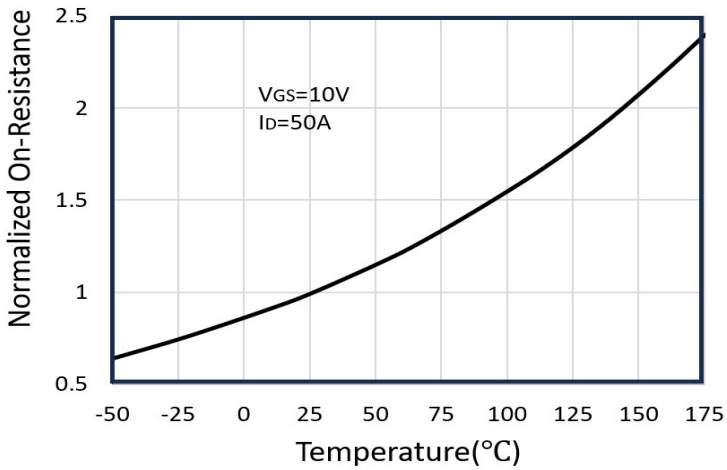


Figure 4: On-Resistance vs. Junction Temperature

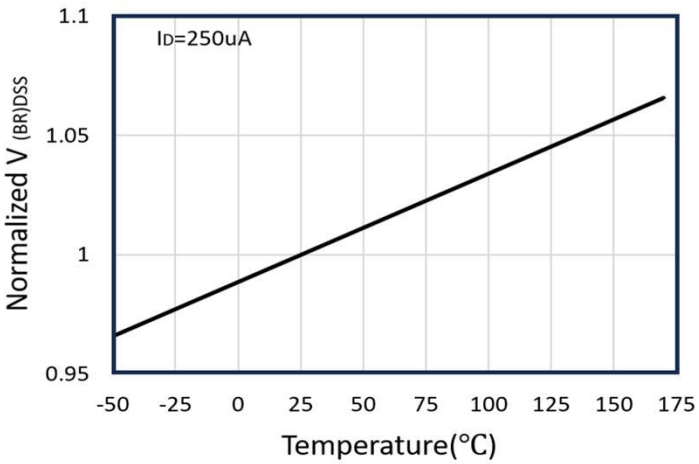


Figure 5: Breakdown Voltage vs. Junction Temperature

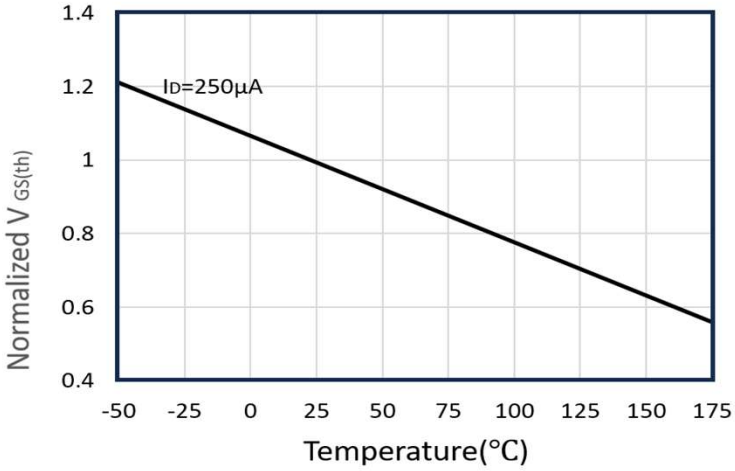


Figure 6: Threshold Voltage vs. Junction Temperature

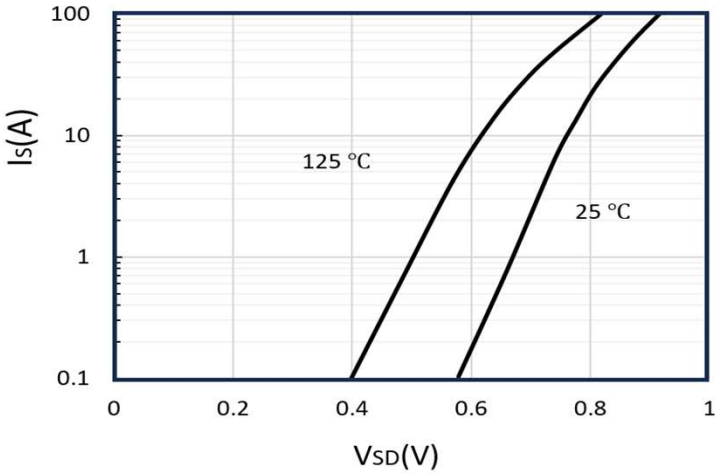


Figure 7: Body-Diode Characteristics

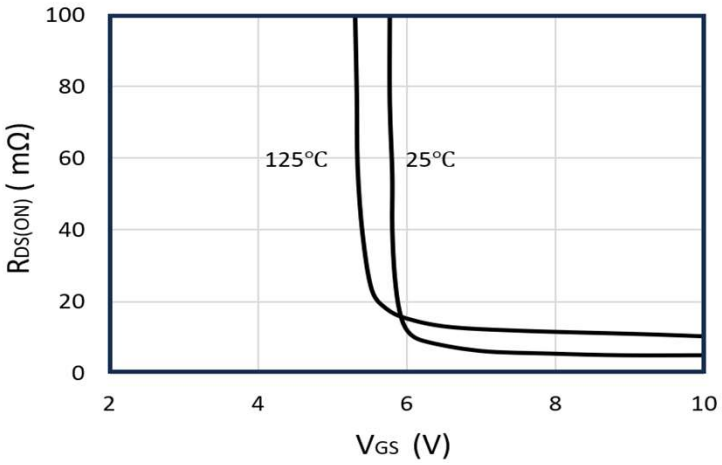


Figure 8: On-Resistance vs.Gate-Source Voltage

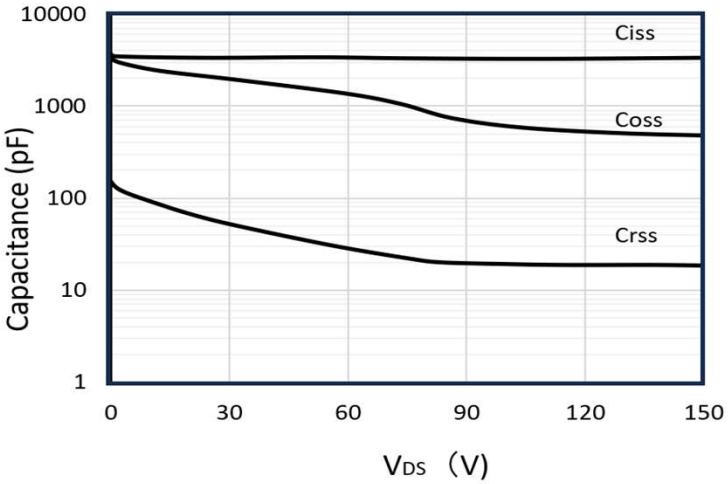


Figure 9: Capacitance Characteristics

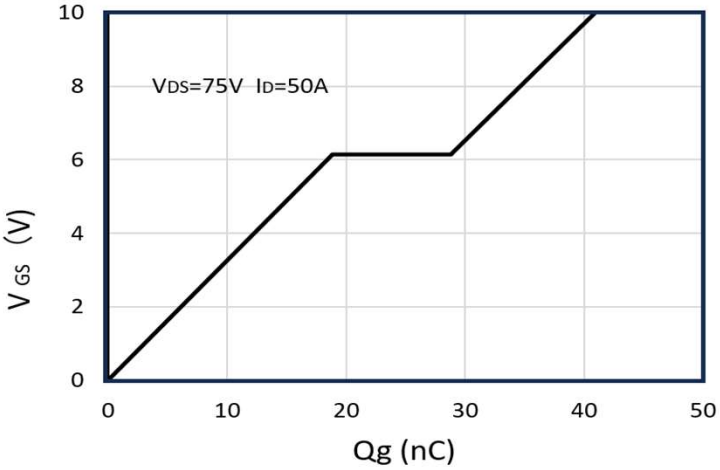


Figure 10: Gate-Charge Characteristics

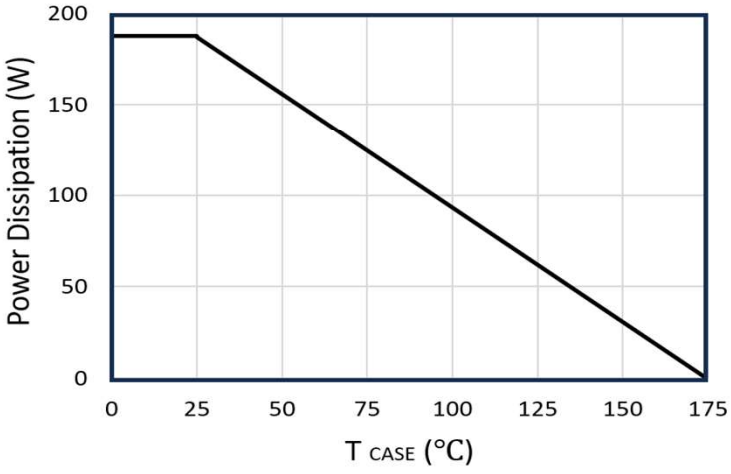


Figure 11: Power De-rating

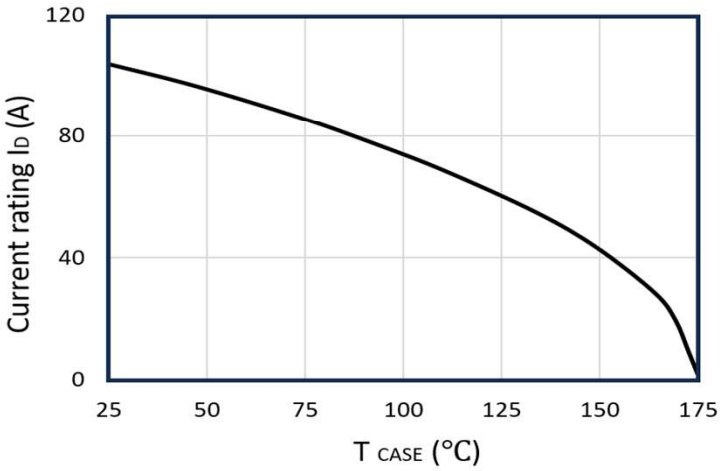


Figure 12: Current De-rating

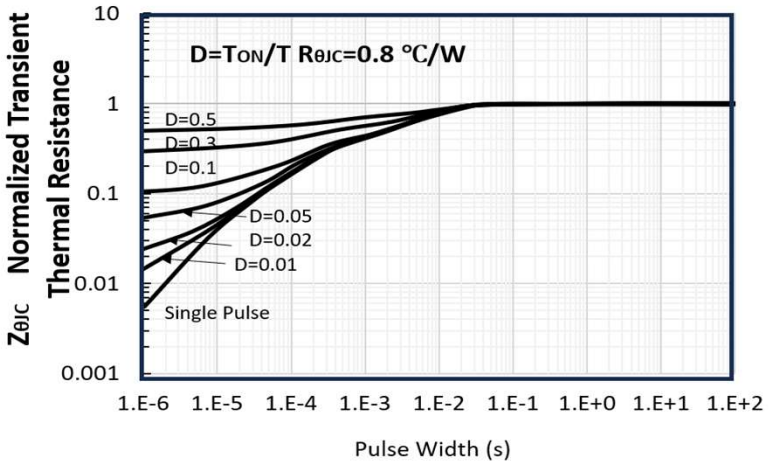


Figure 13: Normalized Maximum Transient Thermal Impedance

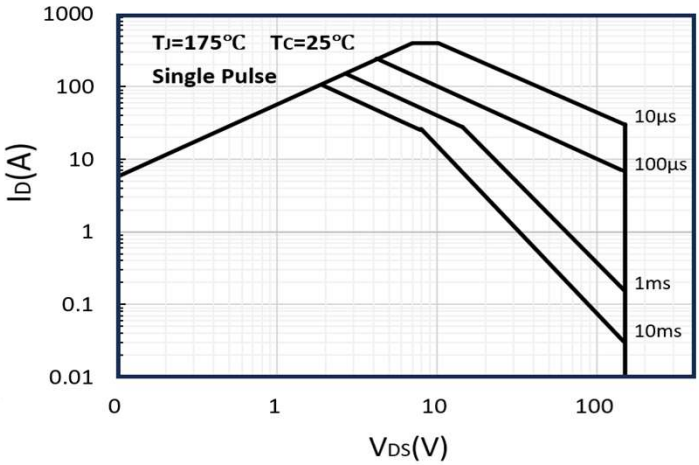
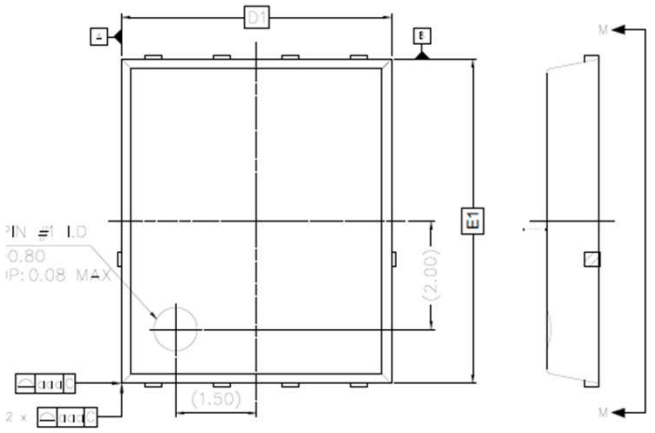
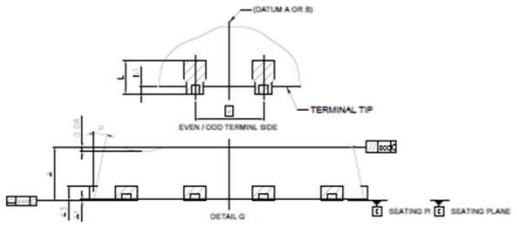
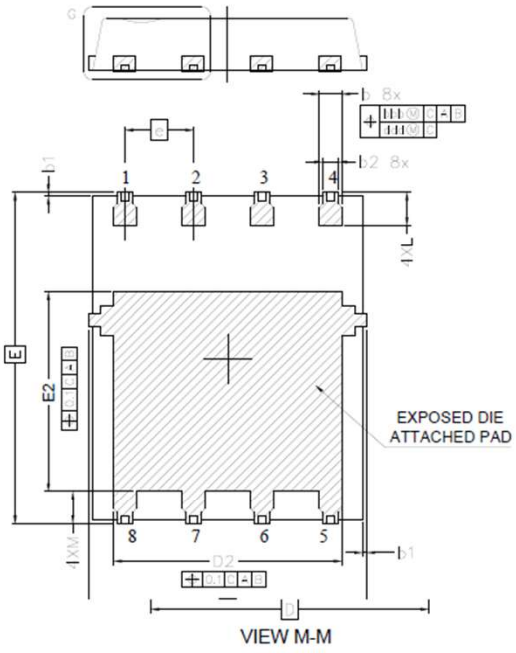


Figure 14: Maximum Forward Biased Safe Operating Area

Package Outline







SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A	0.95	1.05	aaa		0.10
A1	0.00	0.05	bbb		0.10
A3	0.25 REF		ccc		0.10
b	0.31	0.51	ddd		0.05
b1	0.03	0.13	eee		0.08
b2	0.21	0.41			
D	5.15 BSC				
D1	5.00 BSC				
D2	4.00	4.20			
E	6.15 BSC				
E1	6.00 BSC				
E2	3.60	3.80			
e	1.27 BSC				
L	0.51	0.71			
M	0.51	0.71			
P	10°	12°			

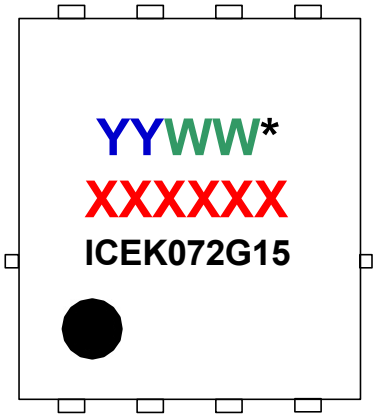
Marking Information

YY = Last two digits of the year

WW = Work week

* = Site ID

XXXXXX = Lot ID



ICEK072G15 = ICE is IceMOS logo and K072G15 is a designated device part number

Disclaimer

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