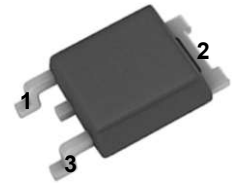
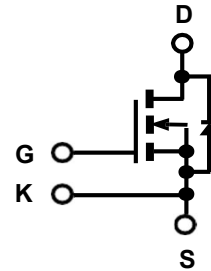


ICEK070GL10D N-Channel Enhancement Mode MOSFET

Features

- Very low $r_{DS(on)}$
- Superior UIS performance
- Optimized design for Motor Drivers and DC-DC Converter

Product Summary			
I_D	$T_A=25^\circ\text{C}$	70A	Max
$V_{(BR)DSS}$	$I_D=250\mu\text{A}$	100V	Min
$r_{DS(on)}$	$V_{GS}=10\text{V}$	5.8m Ω	Typ
Q_g	$V_{DS}=50\text{V}$	39nC	Typ



T0252

Standard Metal
Heatsink

1=Gate, 2=Drain,
3=Source.



Maximum ratings^a at $T_j=25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current ^b	I_D	$T_c=25^\circ\text{C}$ silicon limit	108	A
		$T_c=25^\circ\text{C}$ package limit	70	
		$T_c=100^\circ\text{C}$	68	
Pulsed drain current ^b	$I_{D, \text{pulse}}$	$T_c=25^\circ\text{C}$	240	A
Avalanche energy, single pulse	E_{AS}	$L=0.5\text{mH}$, $V_{DD}=50\text{V}$, $I_D=20\text{A}$, $R_G=50\Omega$	100	mJ
Avalanche current, repetitive ^b	I_{AR}	limited by $T_j\text{max}$	20	A
Gate source voltage	V_{GS}	Static	± 20	V
		AC ($f>1\text{Hz}$)		
Power dissipation	P_{tot}	$T_c=25^\circ\text{C}$	143.6	W
Operating and storage temperature	T_j, T_{stg}		-55 to +150	$^\circ\text{C}$

^a Preliminary data sheet - Specifications subject to change.

^b limited by $T_{j\text{max}}$

^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}		-	-	0.87	°C/W
Thermal resistance, junction-ambient °	R_{thJA}	leaded	-	-	50	
Soldering temperature, wave soldering only allowed at leads	T_{sold}	1.6mm (0.063in.) from case for 10 s	-	-	260	°C

Electrical characteristics at $T_j=25^{\circ}\text{C}$, unless otherwise specified

Static characteristics

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.9	3	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
Gate source leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	5.8	7	m Ω
Gate resistance	R_G	$f=1\text{ MHz}$, open drain	-	1.6	-	Ω

Dynamic characteristics

Input capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1\text{ MHz}$	-	2185	-	pF
Output capacitance	C_{oss}		-	710	-	
Reverse transfer capacitance	C_{rss}		-	25	-	
Turn-on delay time	$t_{d(on)}$	$V_{DS}=50V, R_L=3.8\Omega, V_{GS}=10V, R_G=6.8\Omega$ (External)	-	11	-	ns
Rise time	t_r		-	21	-	
Turn-off delay time	$t_{d(off)}$		-	44	-	
Fall time	t_f		-	25	-	

Parameter	Symbol	Conditions	Values			Unit
			Min	Typ	Max	

Gate charge characteristics

Gate to source charge	Q_{gs}	$V_{DS}=50V, I_D=40A,$ $V_{GS}=0 \text{ to } 10V$	-	6	-	nC
Gate to drain charge	Q_{gd}		-	10	-	
Gate charge total	Q_g		-	39	-	

Reverse Diode

Continuous forward current	I_S	$V_{GS}=0V$	-	-	70	A
Diode forward voltage	V_{SD}	$V_{GS}=0V, I_S=20A$	-	0.84	-	V
Reverse recovery time	t_{rr}	$V_{RR}=50V, I_S=40A,$ $d_{iF}/d_t=100 \text{ A}/\mu\text{S}$	-	52	-	ns
Reverse recovery charge	Q_{rr}		-	80	-	nC
Peak reverse recovery current	I_{rm}		-	2.5	-	A

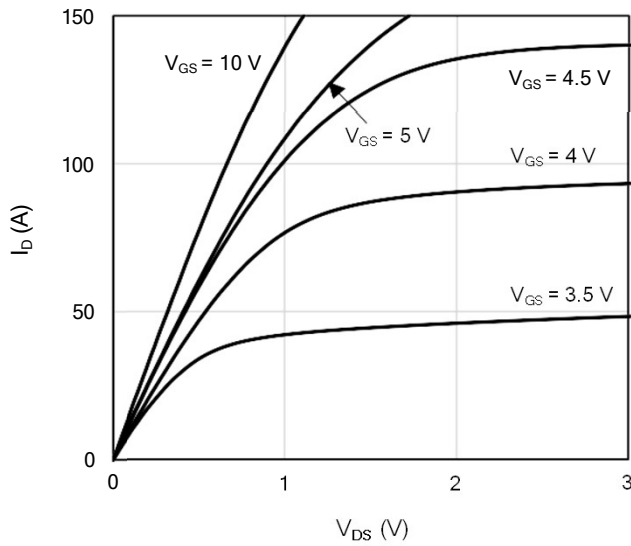


Figure 1: On-Region Characteristics

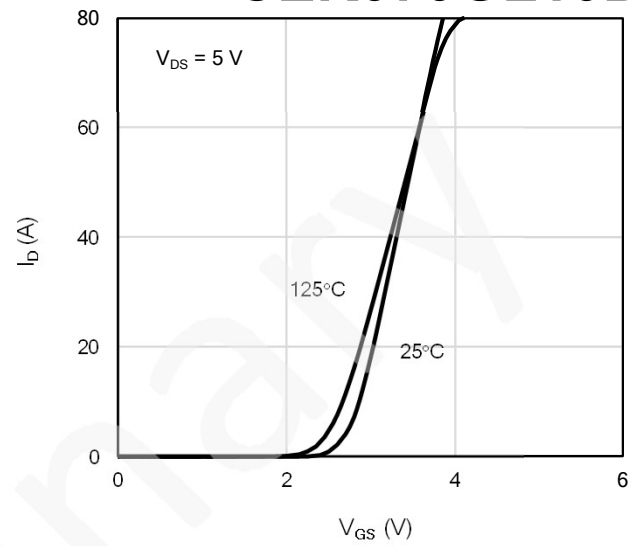


Figure 2: Transfer Characteristics

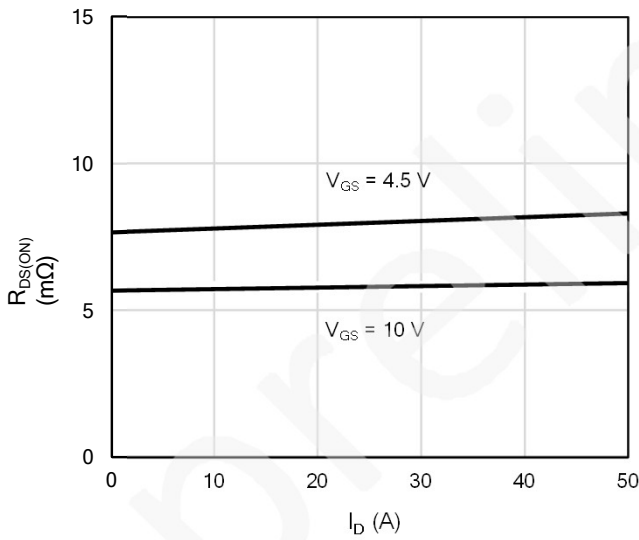


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

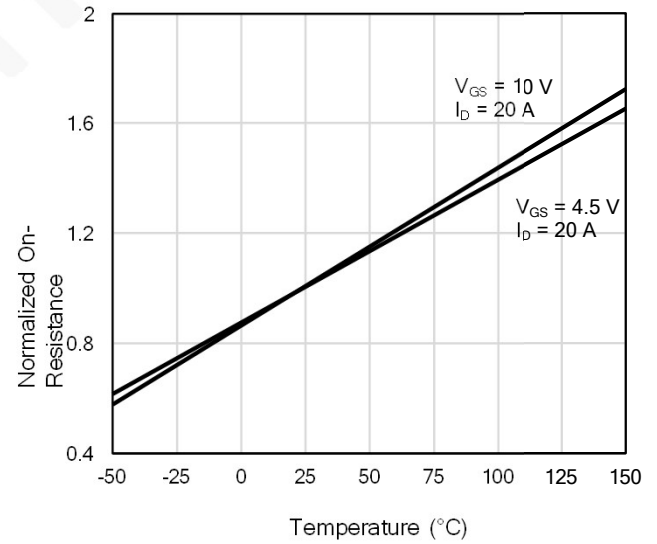


Figure 4: On-Resistance vs. Junction Temperature

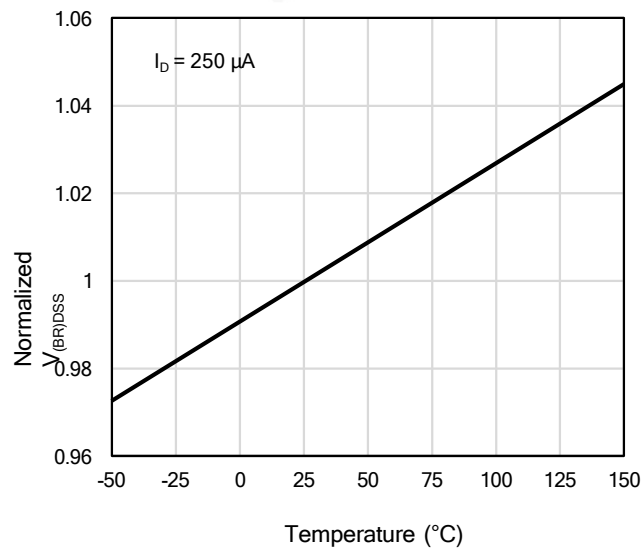


Figure 5: Breakdown Voltage vs. Junction Temperature

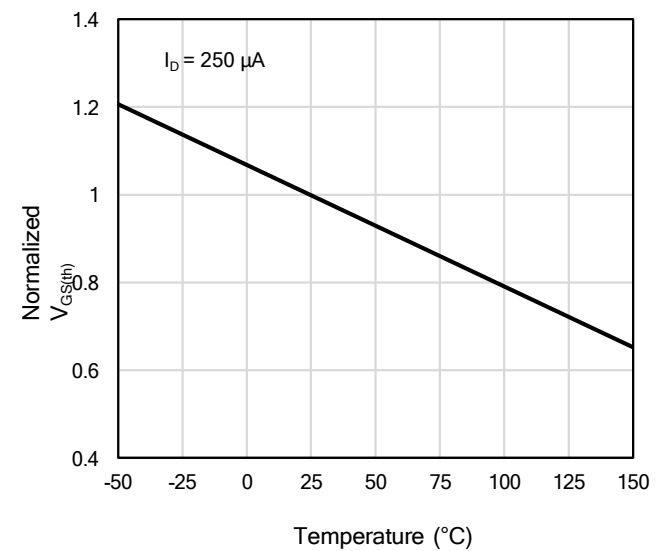


Figure 6: Threshold Voltage vs. Junction Temperature

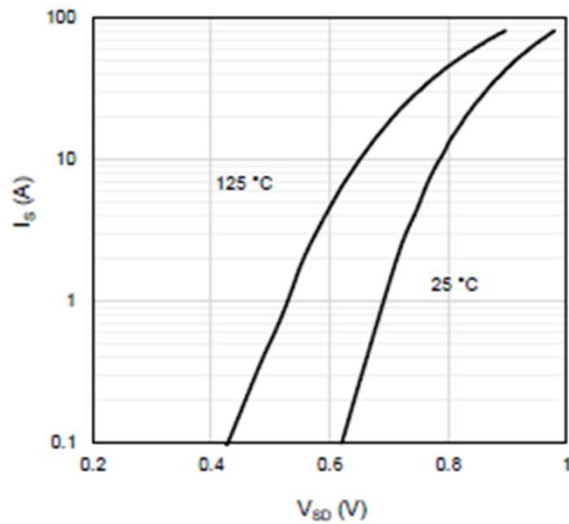


Figure 7: Body-Diode Characteristics

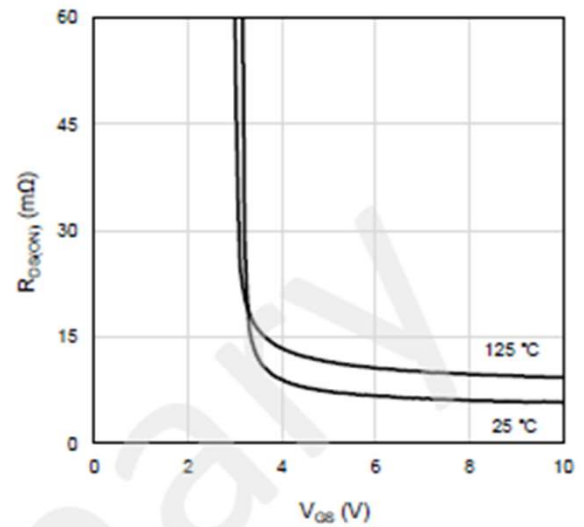


Figure 8: On-Resistance vs. Gate-Source Voltage

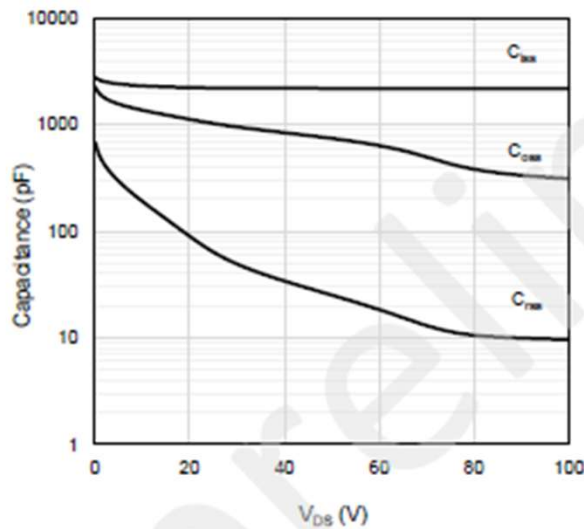


Figure 9: Capacitance Characteristics

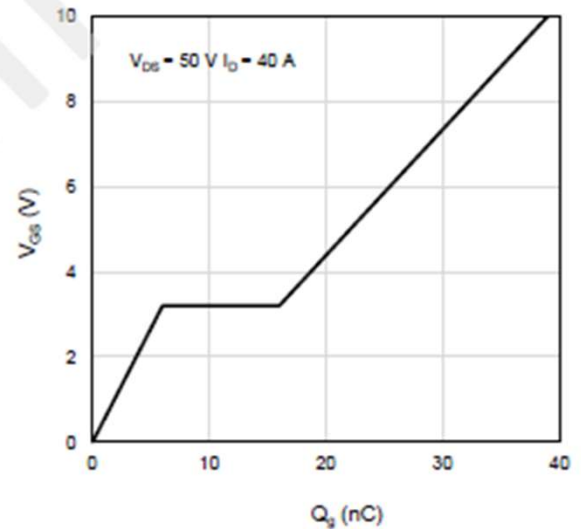


Figure 10: Gate-Charge Characteristics

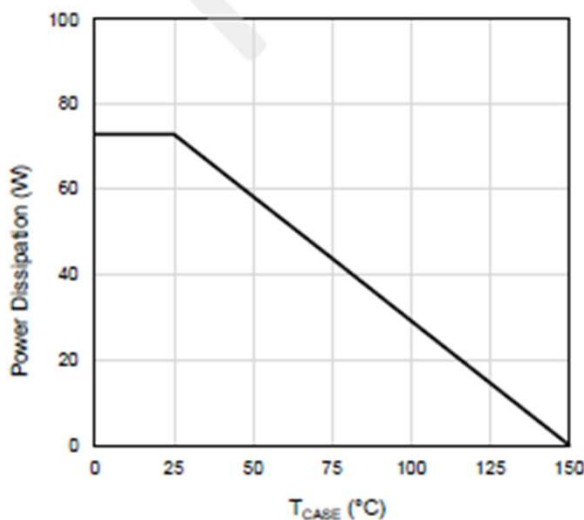


Figure 11: Power De-rating

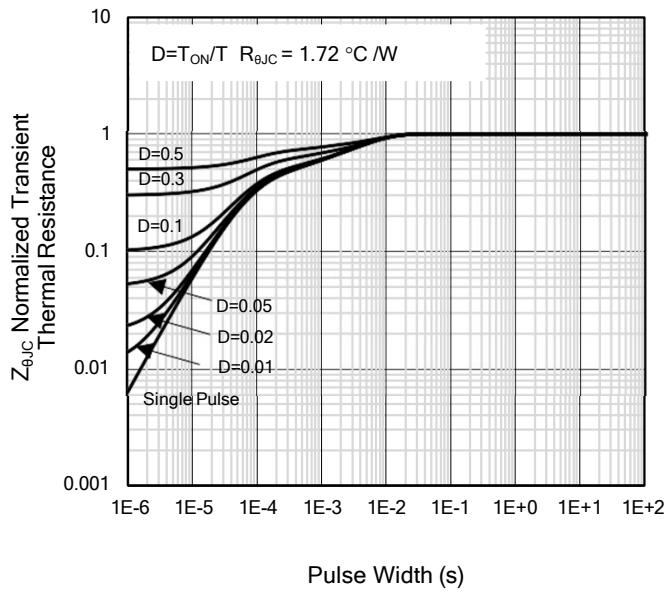


Figure 12: Normalized Maximum Transient Thermal Impedance

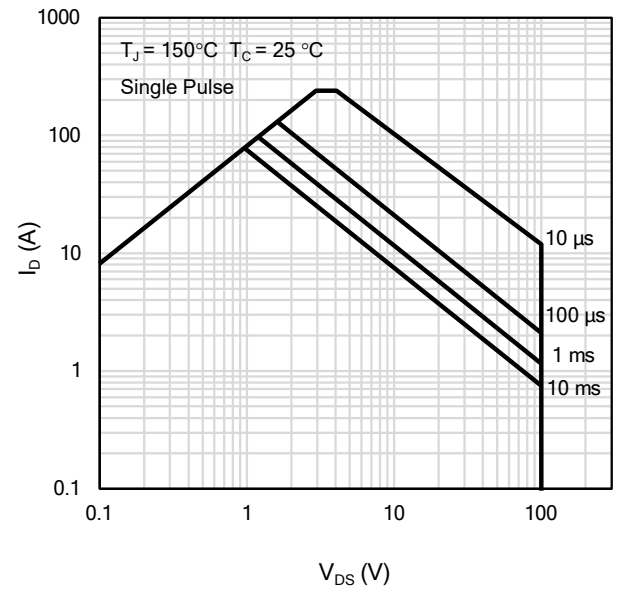
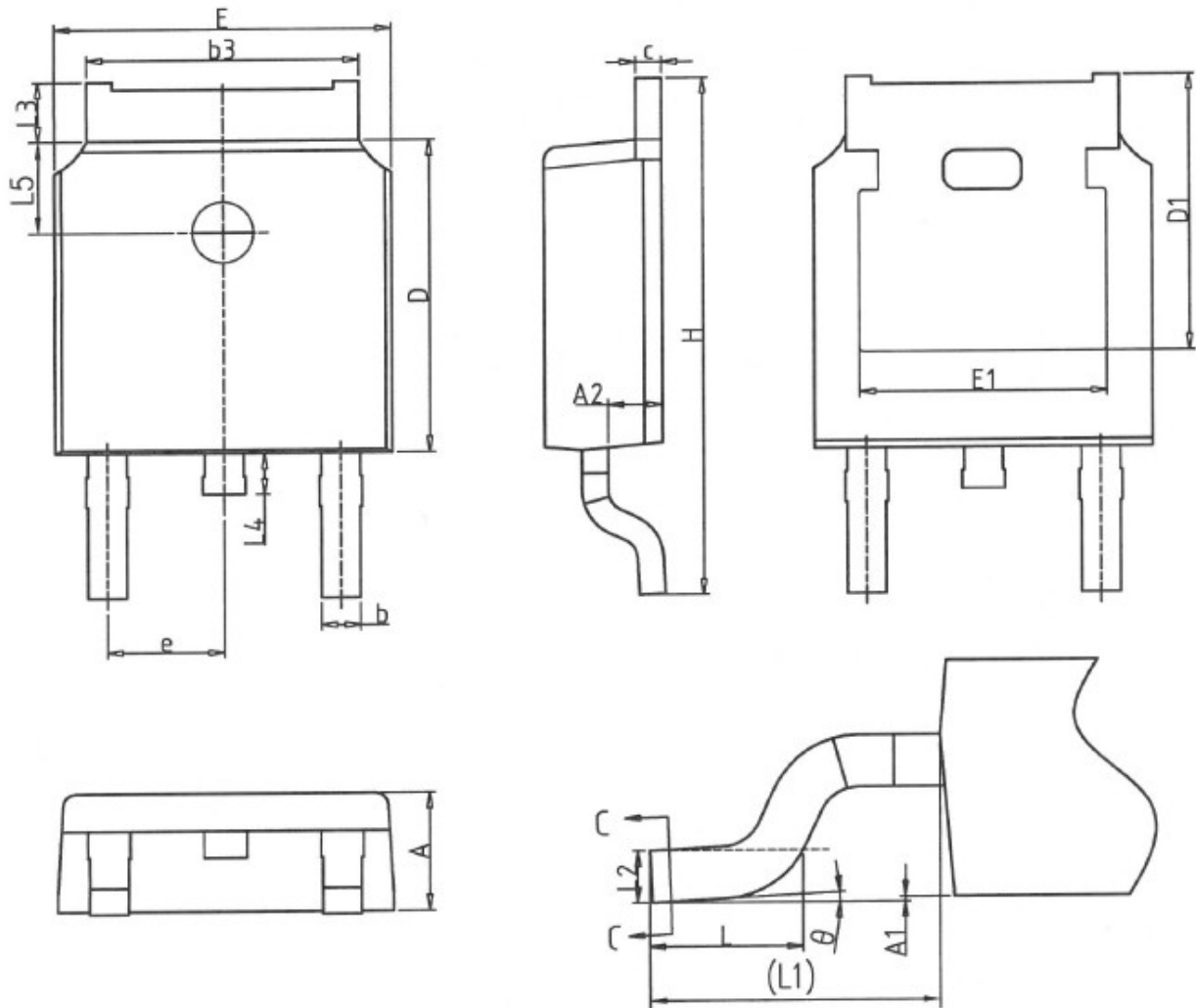


Figure 13: Maximum Forward Biased Safe Operating Area

Package Outline: TO252 (DPAK)



Package Outline: TO252 (DPAK)

SYMBOL	unit : mm		
	Min.	Nom.	Max
A	2.20	2.30	2.38
A1	0.00	-	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90REF		
L2	0.51BSC		
L3	0.88	-	1.28
L4	0.50	-	1.00
L5	1.65	1.80	1.95
θ	0°		8°

Marking Information

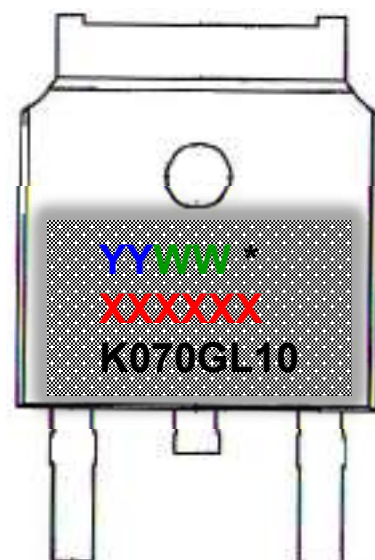
YY = Last two digits of the year

WW = Work week

***** = Site ID

XXXXXX = Lot ID

K070GL10 = ICE is IceMOS logo and
K070GL10 is a designated device
part number



Disclaimer

Information contained in this data sheet shall in no event be regarded as a guarantee of conditions or characteristics. All product, data sheet are subject to change without notice to improve reliability. ICEMOS technology will not be responsible for damages of any nature resulting from the use or reliance upon the information contained in this data sheet.