



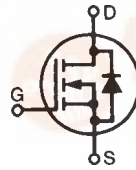
# CoolMOS™ Power MOSFET IXKC 20N60C in ISOPLUS220™ Package

## Electrically Isolated Back Surface

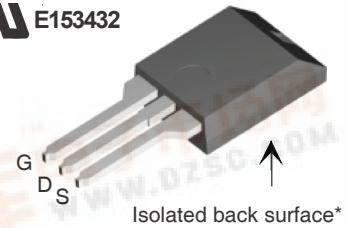
N-Channel Enhancement Mode  
Low  $R_{DS(on)}$ , Superjunction MOSFET

Preliminary Data Sheet

$V_{DSS} = 600 \text{ V}$   
 $I_{D25} = 14 \text{ A}$   
 $R_{DS(on)} = 190 \text{ m}\Omega$



ISOPLUS 220LV™  
E153432



G = Gate, D = Drain,  
S = Source

\* Patent pending

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
$V_{GS}$	Continuous	$\pm 20$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$ ; Note 1	14	A
$I_{D90}$	$T_C = 90^\circ\text{C}$ , Note 1	10	A
$I_{D(RMS)}$	Package lead current limit	45	A
$E_{AS}$	$I_o = 10\text{A}$ , $T_C = 25^\circ\text{C}$	690	mJ
$E_{AR}$	$I_o = 20\text{A}$	1	mJ
$P_D$	$T_C = 25^\circ\text{C}$	125	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +125	$^\circ\text{C}$
$T_L$	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
$V_{ISOL}$	RMS leads-to-tab, 50/60 Hz, $t = 1$ minute	2500	V~
$F_C$	Mounting force	11 ... 65 / 2.4 ... 11	N/lb
<b>Weight</b>		3	g

### Features

- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- 3<sup>RD</sup> generation CoolMOS power MOSFET
  - High blocking capability
  - Low on resistance
  - Avalanche rated for unclamped inductive switching (UIS)
- Low thermal resistance due to reduced chip thickness
- Low drain to tab capacitance (<30pF)

### Applications

- Switched Mode Power Supplies (SMPS)
- Uninterruptible Power Supplies (UPS)
- Power Factor Correction (PFC)
- Welding
- Inductive Heating

### Advantages

- Easy assembly: no screws or isolation foils required
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = I_{D90}$ , Note 3 $V_{GS} = 10 \text{ V}$ , $I_D = I_{D90}$ , Note 3 $T_J = 125^\circ\text{C}$		160 463	190 mΩ mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 1 \text{ mA}$	3.5		5.5 V
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0 \text{ V}$		10	1 $\mu\text{A}$ 1 $\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100 \text{ nA}$

CoolMOS is a trademark of Infineon Technologies, AG

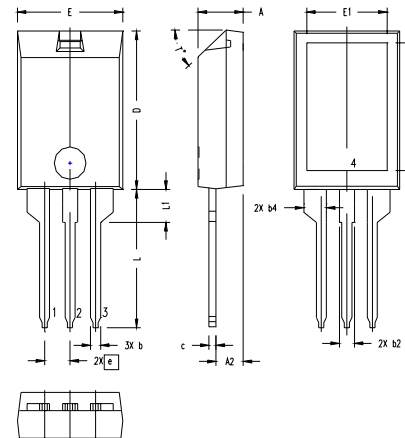


Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$Q_{g(\text{on})}$	$V_{GS} = 10\text{ V}, V_{DS} = 350\text{ V}, I_D = 20\text{ A}$		79	nC
$Q_{gs}$			21	nC
$Q_{gd}$			46	nC
$t_{d(\text{on})}$	$V_{GS} = 10\text{ V}, V_{DS} = 380\text{ V}$ $I_D = 20\text{ A}, R_G = 3.3\ \Omega$		20	ns
$t_r$			55	ns
$t_{d(\text{off})}$			60	ns
$t_f$			10	ns
$R_{thJC}$				1 K/W
$R_{thCH}$		0.30		K/W

**Reverse Conduction**

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{SD}$	$I_F = 10\text{ A}, V_{GS} = 0\text{ V}$ Note 3		0.8	1.2 V

- Note: 1. MOSFET chip capability  
 2. Intrinsic diode capability  
 3. Pulse test,  $t \leq 300\ \mu\text{s}$ , duty cycle  $d \leq 2\%$

**TO-220LV Outline**


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T*			42.5*	47.5*

**NOTE:**

- Bottom heatsink (Pin 4) is electrically isolated from Pin 1, 2, or 3.
- This drawing will meet dimensional requirement of JEDEC SS Product Outline TO-273 except D and D1 dimension.