

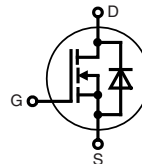
# CoolMOS™ 1) Power MOSFET

N-Channel Enhancement Mode  
 Low  $R_{DS(on)}$ , High  $V_{DSS}$  MOSFET  
 Ultra low gate charge

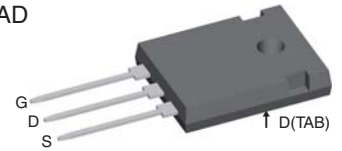
$$I_{D25} = 30 \text{ A}$$

$$V_{DSS} = 600 \text{ V}$$

$$R_{DS(on) \text{ max}} = 0.125 \Omega$$



TO-247 AD



MOSFET			
Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^\circ\text{C}$	600	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	30	A
$I_{D90}$	$T_C = 90^\circ\text{C}$	21	A
$E_{AS}$	single pulse } $I_D = 11 \text{ A}; T_C = 25^\circ\text{C}$ repetitive	708	mJ
$E_{AR}$		1.2	mJ
$dV/dt$	MOSFET $dV/dt$ ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	50	V/ns

## Features

- fast CoolMOS™ 1) power MOSFET 4<sup>th</sup> generation
- High blocking capability
- Lowest resistance
- Avalanche rated for unclamped inductive switching (UIS)
- Low thermal resistance due to reduced chip thickness
- Enhanced total power density

## Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating
- PDP and LCD adapter

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 16 \text{ A}$		110	125	mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 1.1 \text{ mA}$	2.5	3	3.5	V
$I_{DSS}$	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$			2	$\mu\text{A}$
			20		$\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
$C_{iss}$	} $V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		2500		pF
$C_{oss}$				120	
$Q_g$	} $V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 16 \text{ A}$		53	70	nC
$Q_{gs}$			12		nC
$Q_{gd}$			18		nC
$t_{d(on)}$	} $V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 16 \text{ A}; R_G = 3.3 \Omega$		15		ns
$t_r$			5		ns
$t_{d(off)}$			50		ns
$t_f$			5		ns
$R_{thJC}$				0.4	K/W

<sup>1)</sup> CoolMOS™ is a trademark of Infineon Technologies AG.

**Source-Drain Diode**

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)					
$I_S$	$V_{GS} = 0\text{ V}$			16	A
$V_{SD}$	$I_F = 16\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	} $I_F = 16\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$		430		ns
$Q_{RM}$			9		$\mu\text{C}$
$I_{RM}$			42		A

**Component**

Symbol	Conditions	Maximum Ratings		
$T_{VJ}$	operating		-55...+150	$^{\circ}\text{C}$
$T_{stg}$			-55...+150	$^{\circ}\text{C}$
$M_d$	mounting torque		0.8 ... 1.2	Nm

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
$R_{thCH}$	with heatsink compound		0.25		K/W
<b>Weight</b>			6		g

## TO-247 AD Outline

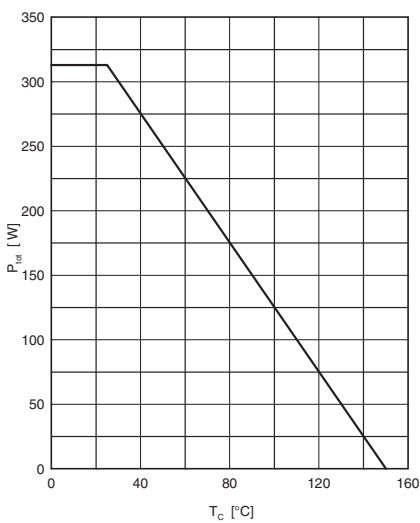
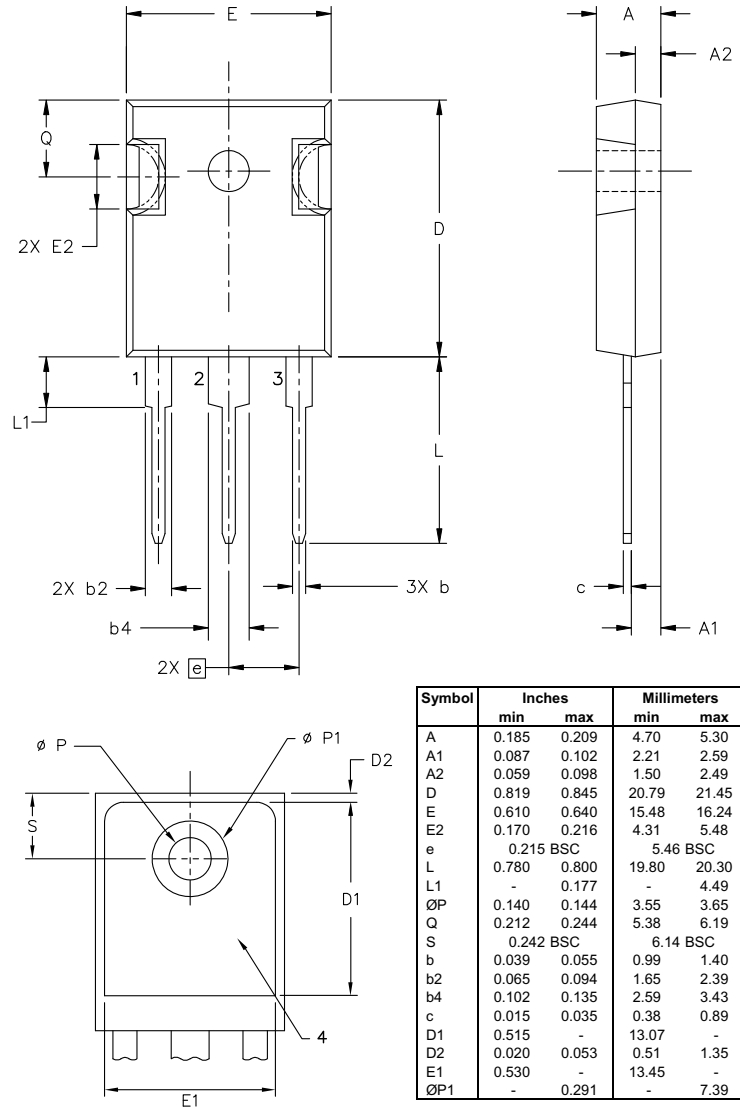


Fig. 1 Power dissipation

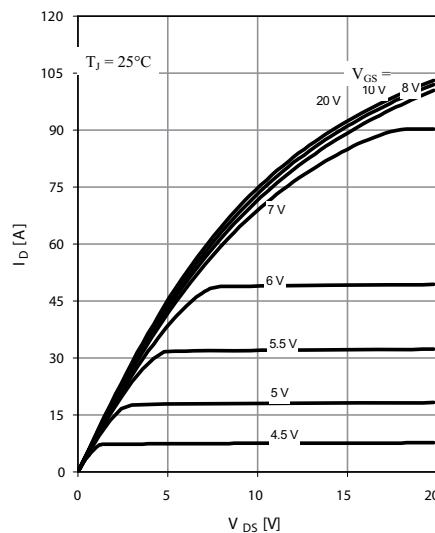


Fig. 2 Typ. output characteristics

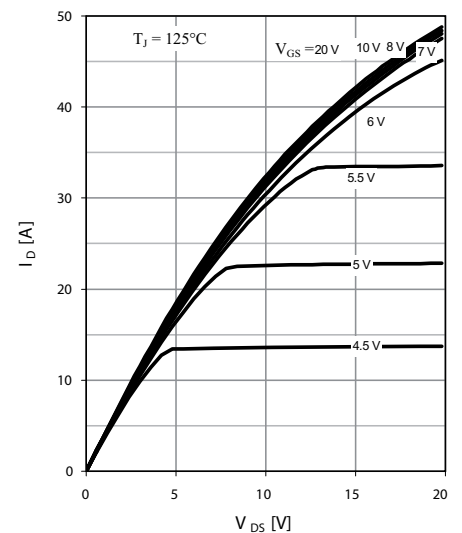


Fig. 3 Typ. output characteristics

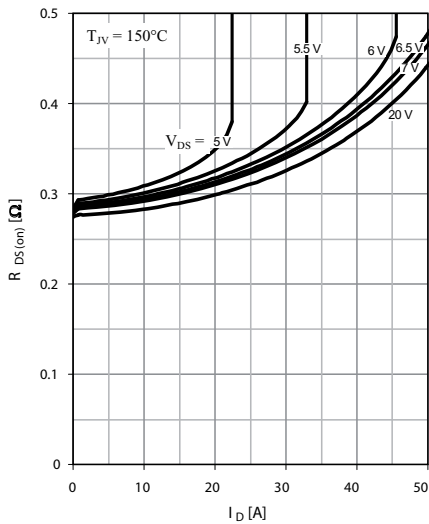


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

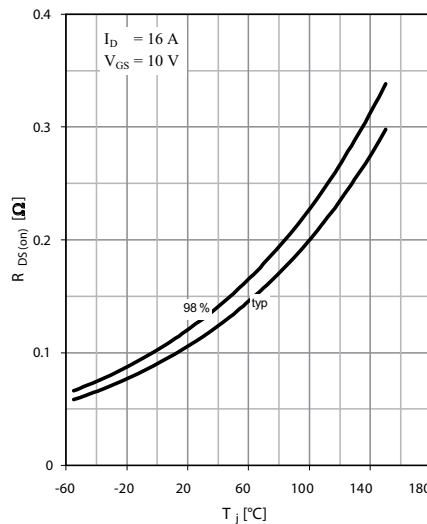


Fig. 5 Drain-source on-state resistance

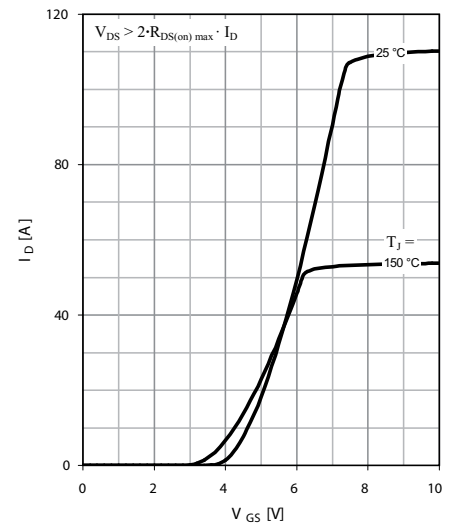


Fig. 6 Typ. transfer characteristics

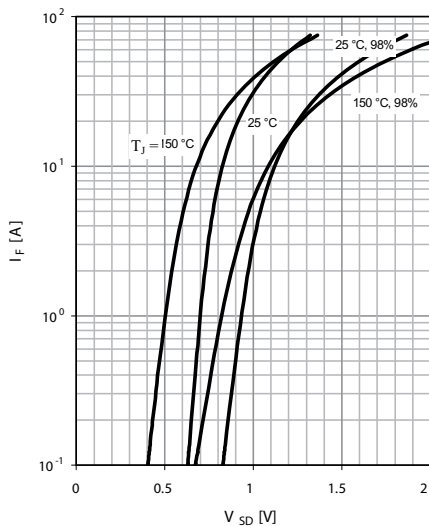


Fig. 7 Forward characteristic of reverse diode

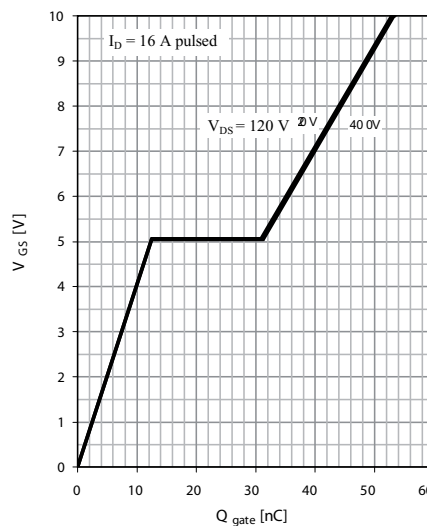


Fig. 8 Typ. gate charge

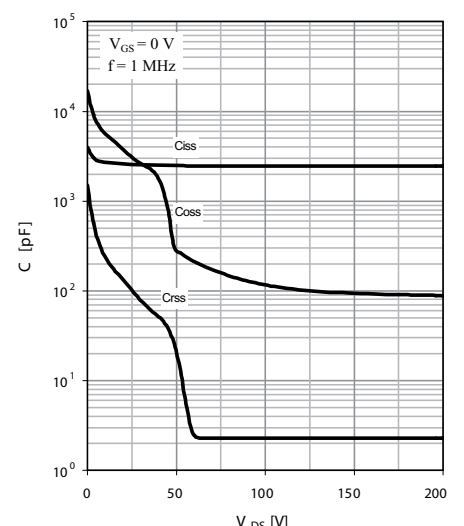


Fig. 9 Typ. capacitances

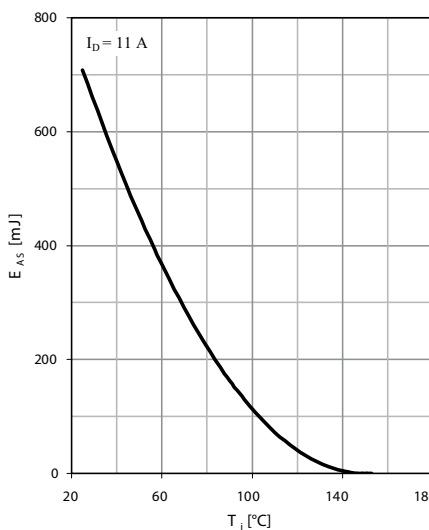


Fig. 10 Avalanche energy

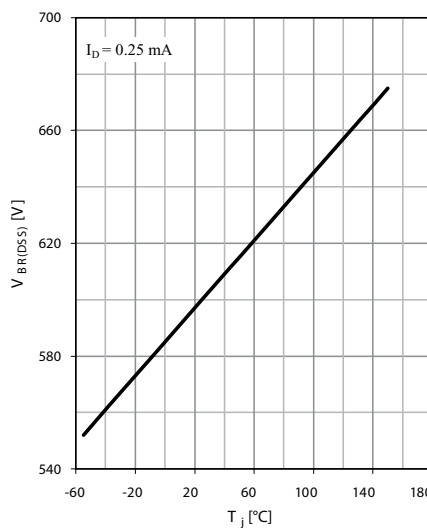


Fig. 11 Drain-source breakdown voltage

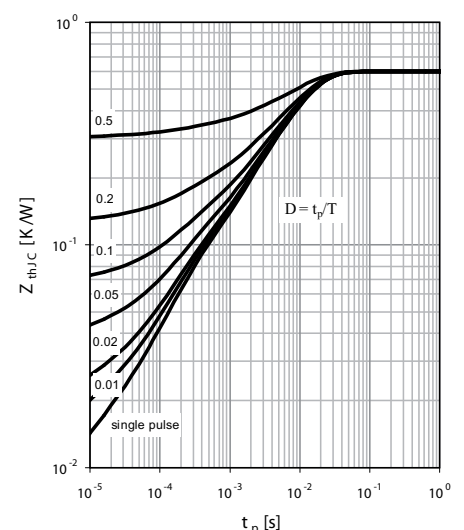


Fig. 12 Max. transient thermal impedance

IXYS reserves the right to change limits, test conditions and dimensions.

20090209d



---

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).