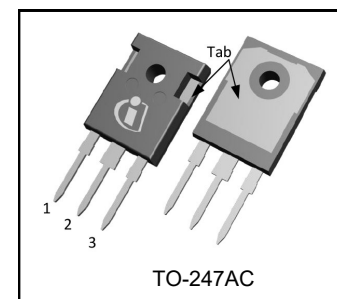
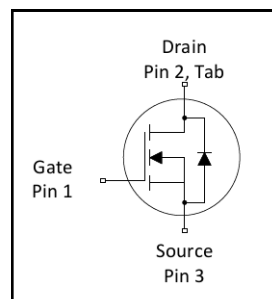


V_{DSS} min	250V
V_{DS} (Avalanche) typ.	300V
R_{DS(on)} typ.	29mΩ
I_D	57A



Features

- Advanced Process Technology
- Key Parameters Optimized for PDP Sustain, Energy Recovery and Pass Switch Applications
- Low E_{PULSE} Rating to Reduce Power Dissipation in PDP Sustain, Energy Recovery and Pass Switch Applications
- Low Q_G for Fast Response
- High Repetitive Peak Current Capability for Reliable Operation
- Short Fall & Rise Times for Fast Switching
- 175°C Operating Junction Temperature for Improved Ruggedness
- Repetitive Avalanche Capability for Robustness and Reliability

Description

This HEXFET® Power MOSFET is specifically designed for Sustain; Energy Recovery & Pass switch applications in Plasma Display Panels. This MOSFET utilizes the latest processing techniques to achieve low on-resistance per silicon area and low E_{PULSE} rating. Additional features of this MOSFET are 175°C operating junction temperature and high repetitive peak current capability. These features combine to make this MOSFET a highly efficient, robust and reliable device for PDP driving applications

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRFP4332PbF	TO-247AC	Tube	25	IRFP4332PbF

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V _{GS}	Gate-to-Source Voltage	± 30	V
I _D @ T _C = 25°C	Continuous Drain Current, V _{GS} @ 10V	57	A
I _D @ T _C = 100°C	Continuous Drain Current, V _{GS} @ 10V	40	
I _{DM}	Pulsed Drain Current ①	230	
I _{RP} @ T _C = 100°C	Repetitive Peak Current⑤⑥	120	W
P _D @ T _C = 25°C	Power Dissipation	360	
P _D @ T _C = 100°C	Power Dissipation	180	
	Linear Derating Factor	2.4	W/°C
T _J T _{STG}	Operating Junction and Storage Temperature Range	-40 to + 175	°C
	Soldering Temperature, for 10 seconds (1.6mm from case)	300	
	Mounting torque, 6-32 or M3 screw	10lbf.in (1.1N.m)	

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
R _{θJC}	Junction-to-Case ④	—	0.42	°C/W
R _{θCS}	Case-to-Sink, Flat Greased Surface	0.24	—	
R _{θJA}	Junction-to-Ambient	—	40	

Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	250	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	170	—	mV/°C	Reference to 25°C , $I_D = 1\text{mA}$ ①
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	29	33	m Ω	$V_{GS} = 10V, I_D = 35A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	3.0	—	5.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold Voltage Coefficient	—	-14	—	mV/°C	
I_{DSS}	Drain-to-Source Leakage Current	—	—	20	μA	$V_{DS} = 250V, V_{GS} = 0V$
		—	—	200		$V_{DS} = 250V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -20V$
g_{fs}	Forward Transconductance	100	—	—	S	$V_{DS} = 25V, I_D = 35A$
Q_g	Total Gate Charge	—	99	150	nC	$V_{DD} = 125V, I_D = 35A$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	35	—		$V_{GS} = 10V$ ③
t_{st}	Shoot Through Blocking Time	100	—	—	ns	$V_{DD} = 200V, V_{GS} = 15V, R_G = 4.7\Omega$
E_{PULSE}	Energy per Pulse	—	520	—	μJ	$L = 220\text{nH}, C = 0.3\mu F, V_{GS} = 15V$ $V_{DD} = 200V, R_G = 5.1\Omega, T_J = 25^\circ\text{C}$
		—	920	—		$L = 220\text{nH}, C = 0.3\mu F, V_{GS} = 15V$ $V_{DD} = 200V, R_G = 5.1\Omega, T_J = 100^\circ\text{C}$
C_{iss}	Input Capacitance	—	5860	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	530	—		$V_{DS} = 25V$
C_{rss}	Reverse Transfer Capacitance	—	130	—		$f = 1.0\text{MHz}$
$C_{oss\text{ eff.}}$	Effective Output Capacitance	—	360	—		$V_{GS} = 0V, V_{DS} = 0V \text{ to } 200V$
L_D	Internal Drain Inductance	—	5.0	—	nH	Between lead, from package
L_S	Internal Source Inductance	—	13	—		

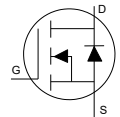


Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②	—	210	mJ
E_{AR}	Repetitive Avalanche Energy ①	—	36	
$V_{DS(Avalanche)}$	Repetitive Avalanche Voltage ①	300	—	V
I_{AS}	Avalanche Current ②	—	35	A

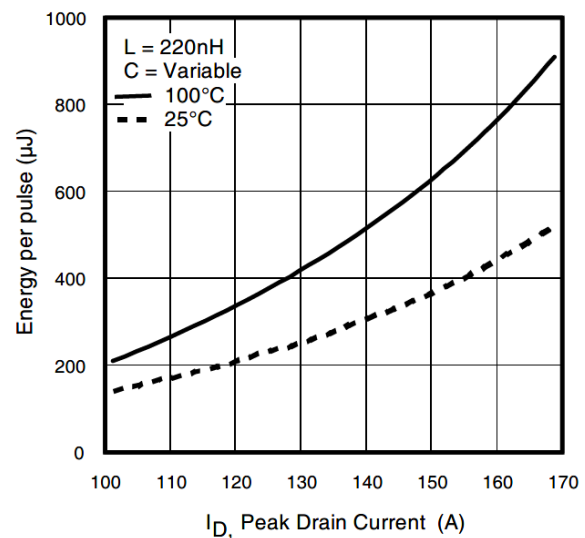
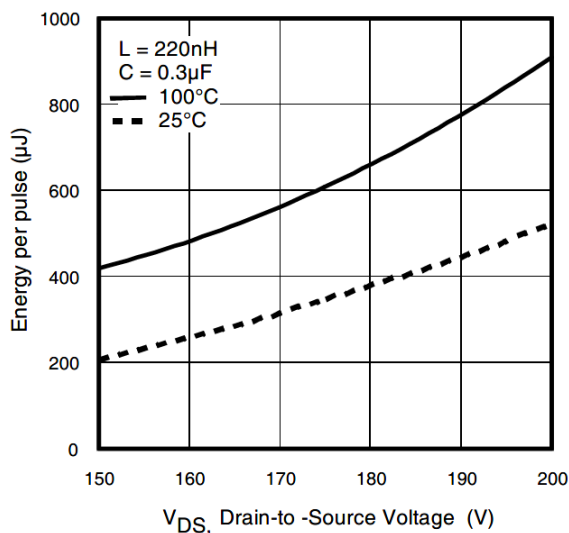
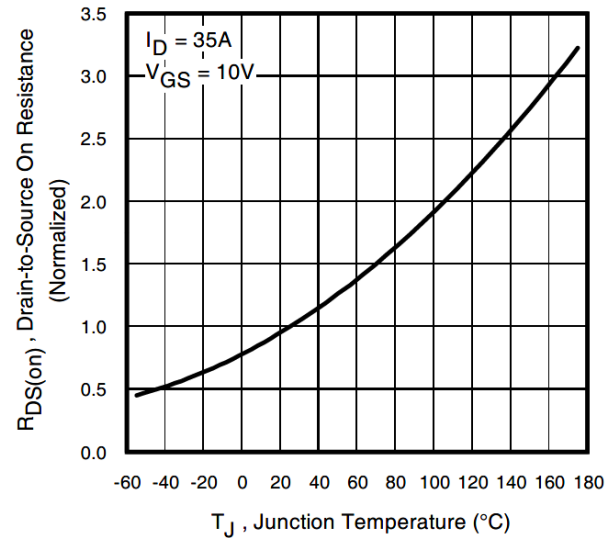
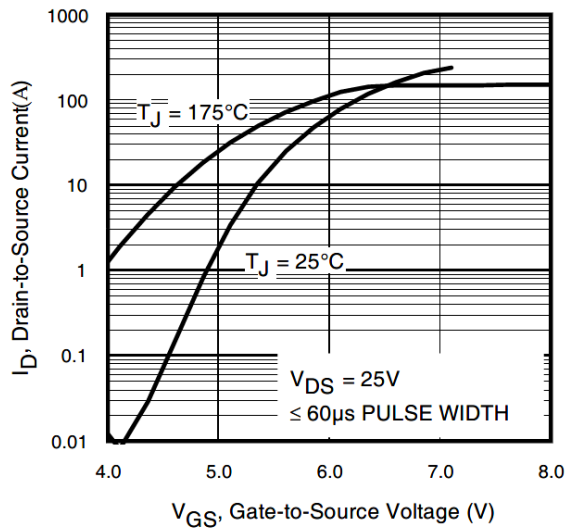
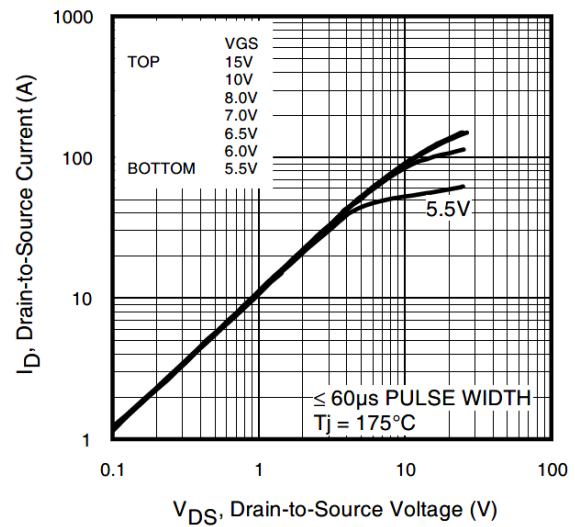
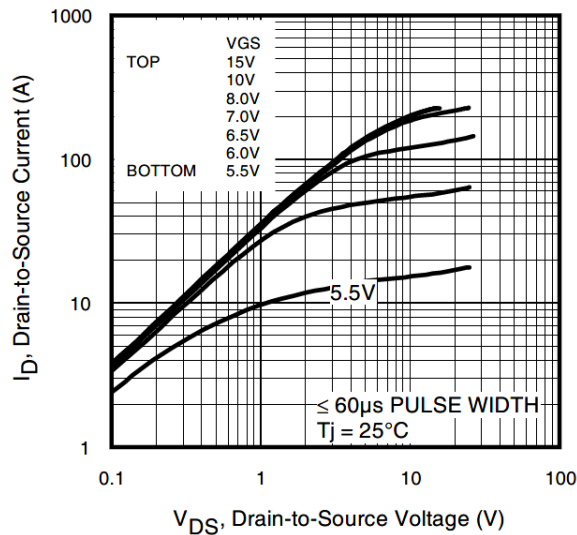
Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	57	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	230	A	
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$T_J = 25^\circ\text{C}, I_S = 35A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	190	290	ns	$T_J = 25^\circ\text{C}, I_F = 35A, V_{DD} = 50V$
Q_{rr}	Reverse Recovery Charge	—	820	1230	nC	$di/dt = 100A/\mu s$ ③



Notes:

- ① Repetitive rating; pulse width limited by max. Junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 0.35\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 35A$.
- ③ Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.
- ④ R_{θ} is measured at T_J approximately 90°C .
- ⑤ Half sine wave with duty cycle = 0.25, $t_{on} = 1\mu s$.
- ⑥ Applicable to Sustain and Energy Recovery applications.



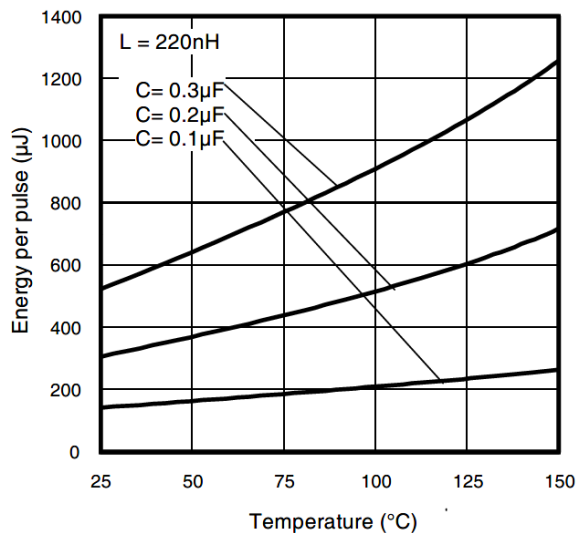


Fig 7. Typical E_{PULSE} vs. Temperature

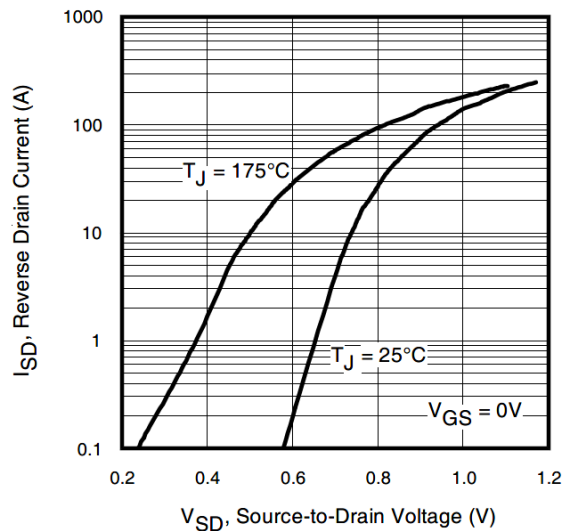


Fig 8. Typical Source-Drain Diode Forward Voltage

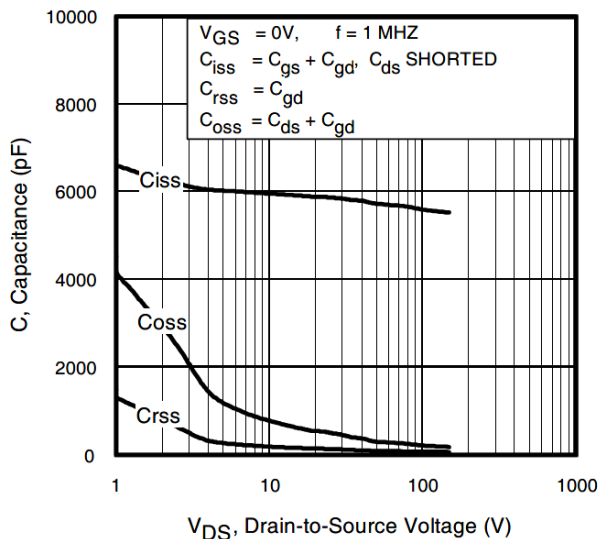


Fig 9. Typical Capacitance vs. Drain-to-Source Voltage

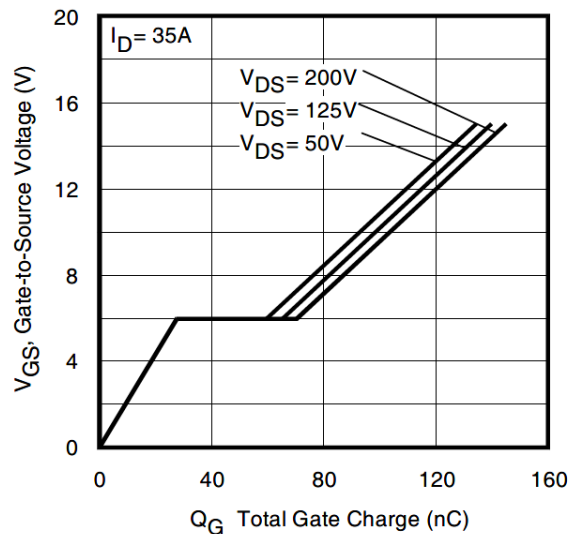


Fig 10. Typical Gate Charge vs. Gate-to-Source Voltage

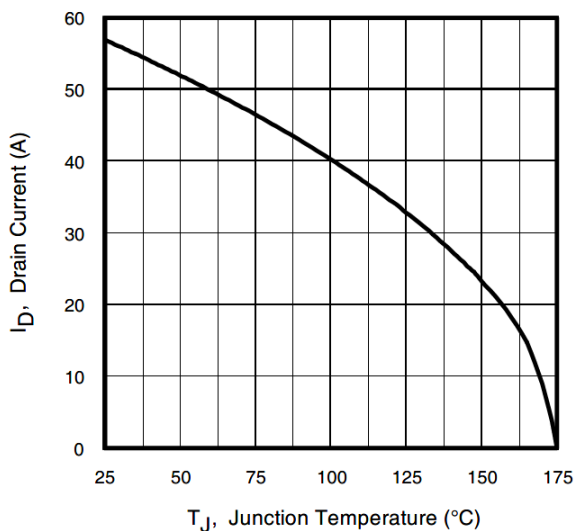


Fig 11. Maximum Drain Current vs. Case Temperature

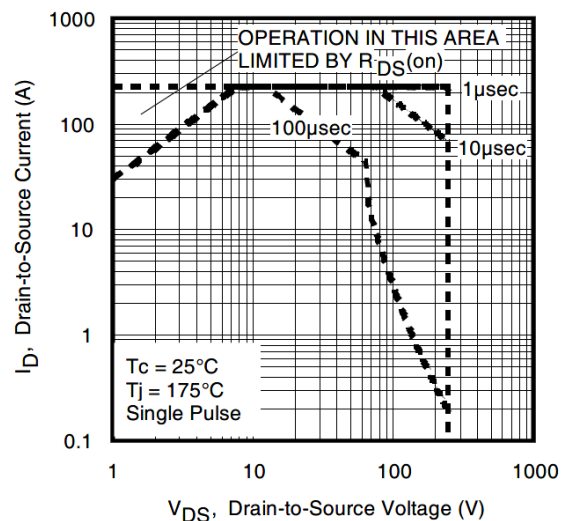
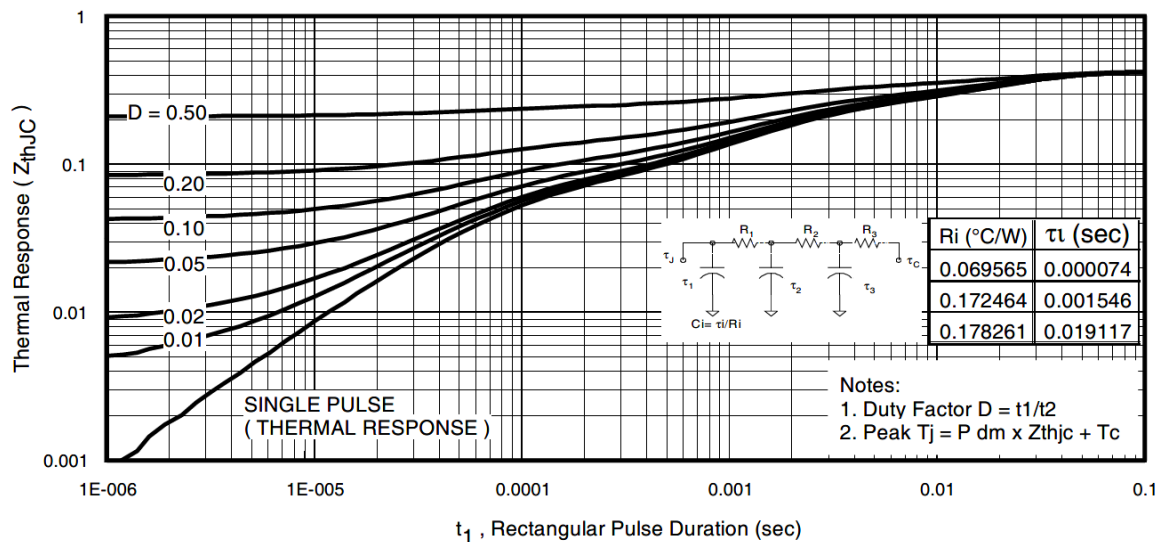
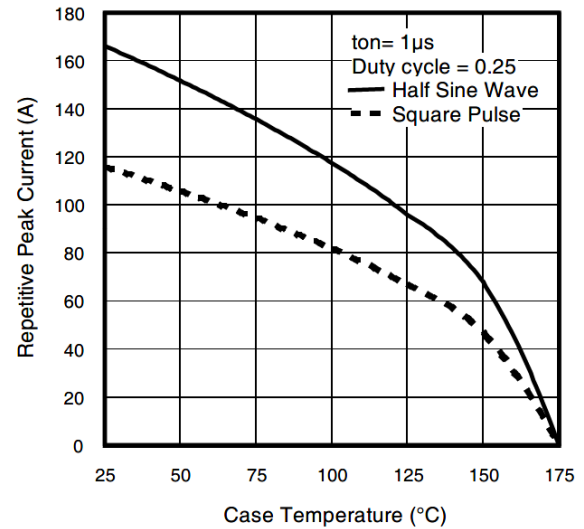
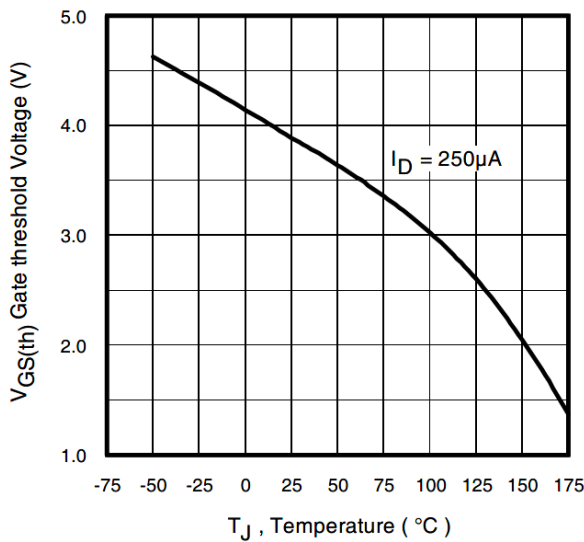
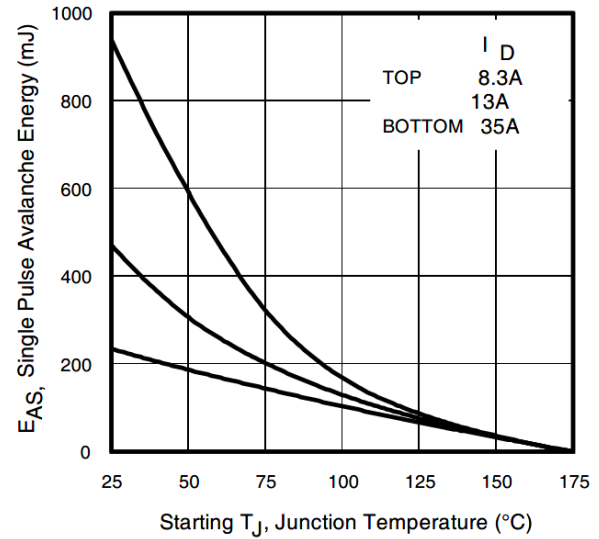
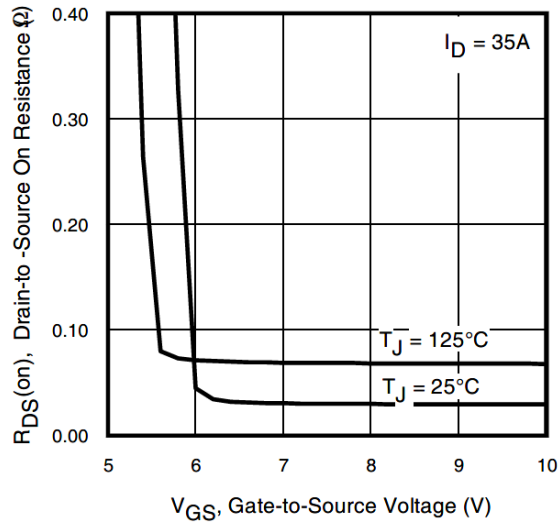


Fig 12. Maximum Safe Operating Area



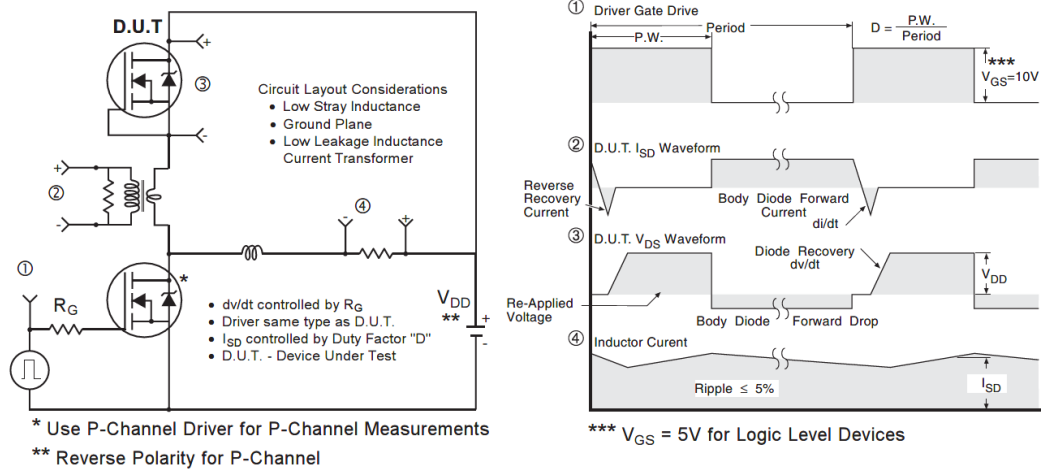


Fig 18. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs

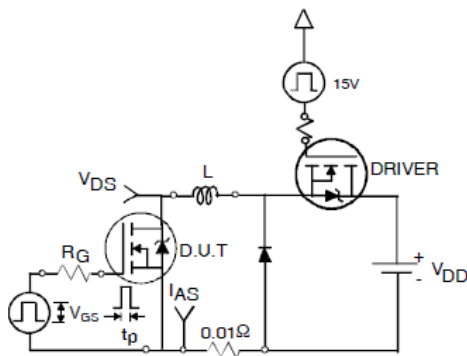


Fig 19a. Unclamped Inductive Test Circuit

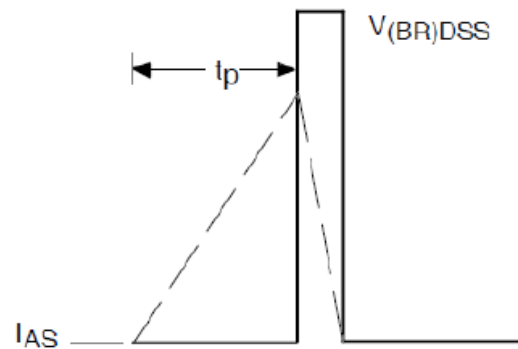


Fig 19b. Unclamped Inductive Waveforms

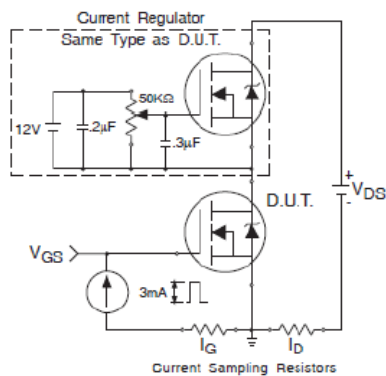


Fig 20a. Gate Charge Test Circuit

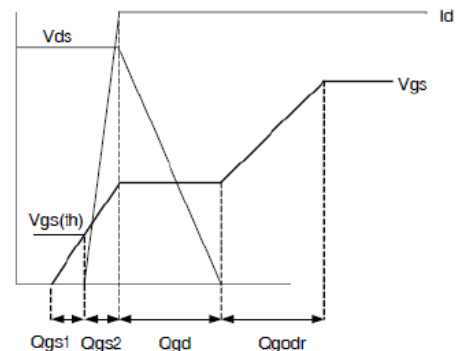


Fig 20b. Gate Charge Waveform

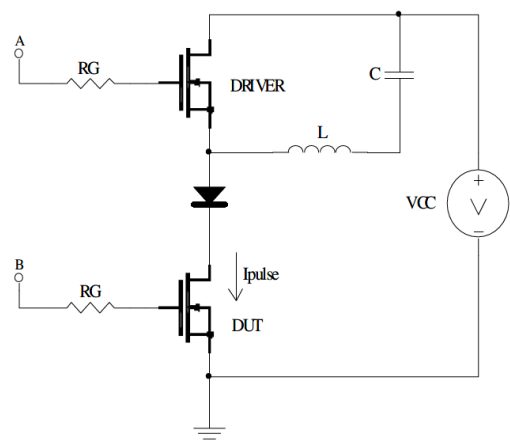


Fig 21a. t_{st} and E_{PULSE} Test Circuit

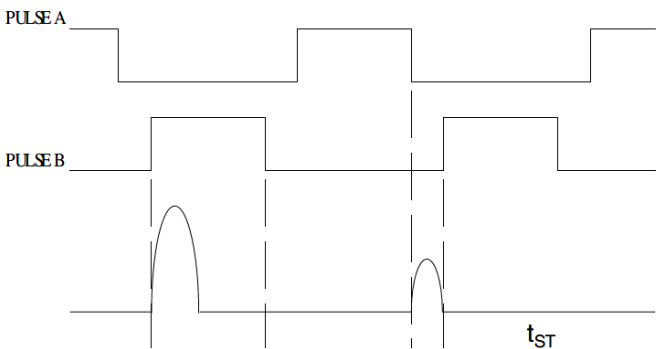


Fig 21b. t_{st} Test Waveforms

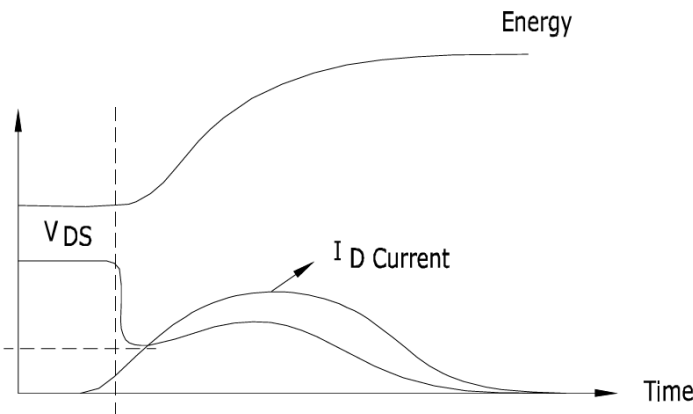
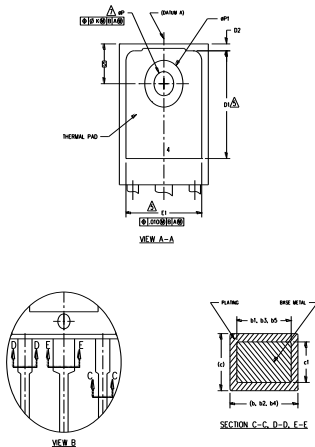
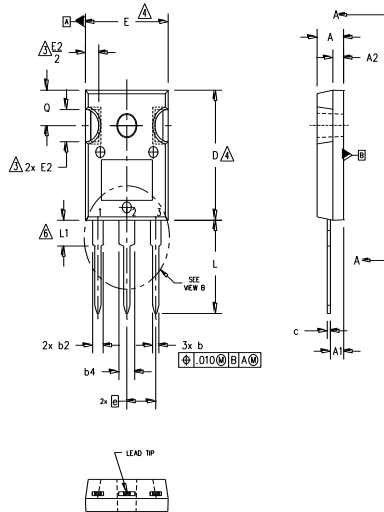


Fig 21c. E_{PULSE} Test Waveforms

TO-247AC Package Outline (Dimensions are shown in millimeters (inches))



NOTES:

1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M 1994.
2. DIMENSIONS ARE SHOWN IN INCHES.
3. CONTOUR OF SLOT OPTIONAL.
4. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .005" (0.127) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
5. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS D1 & E1.
6. LEAD FINISH UNCONTROLLED IN L1.
7. ØP TO HAVE A MAXIMUM DRAFT ANGLE OF 1.5 ° TO THE TOP OF THE PART WITH A MAXIMUM HOLE DIAMETER OF .154 INCH.
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-247AC .

SYMBOL	DIMENSIONS				NOTES
	INCHES		MILLIMETERS		
	MIN.	MAX.	MIN.	MAX.	
A	.183	.209	4.65	5.31	
A1	.087	.102	2.21	2.59	
A2	.059	.098	1.50	2.49	
b	.039	.055	0.99	1.40	
b1	.039	.053	0.99	1.35	
b2	.065	.094	1.65	2.39	
b3	.065	.092	1.65	2.34	
b4	.102	.135	2.59	3.43	
b5	.102	.133	2.59	3.38	
c	.015	.035	0.38	0.89	
c1	.015	.033	0.38	0.84	
D	.776	.815	19.71	20.70	4
D1	.515	—	13.08	—	5
D2	.020	.053	0.51	1.35	
E	.602	.625	15.29	15.87	4
E1	.530	—	13.46	—	
E2	.178	.216	4.52	5.49	
e	.215 BSC		5.46 BSC		
Øk	.010		0.25		
L	.559	.634	14.20	16.10	
L1	.146	.169	3.71	4.29	
ØP	.140	.144	3.56	3.66	
ØP1	—	.291	—	7.39	
Q	.209	.224	5.31	5.69	
S	.217 BSC		5.51 BSC		

LEAD ASSIGNMENTS

HEXFET

- 1.- GATE
- 2.- DRAIN
- 3.- SOURCE
- 4.- DRAIN

IGBTs, CoPACK

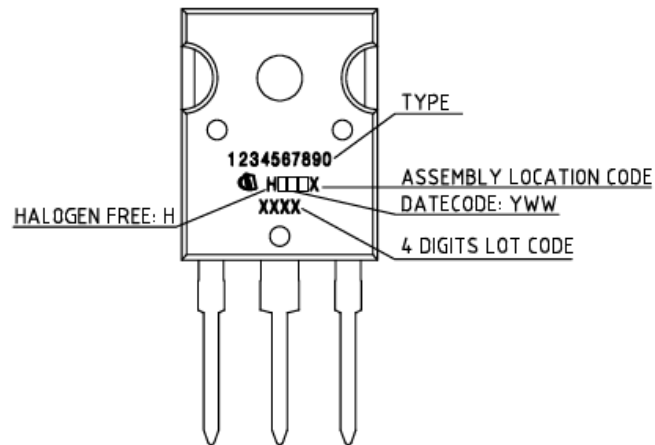
- 1.- GATE
- 2.- COLLECTOR
- 3.- EMITTER
- 4.- COLLECTOR

DIODES

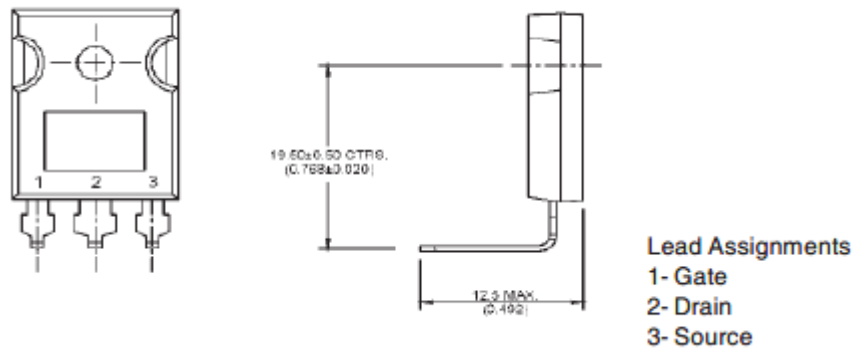
- 1.- ANODE/OPEN
- 2.- CATHODE
- 3.- ANODE

TO-247AC package is not recommended for Surface Mount Application.

TO-247AC Part Marking Information



TO-247AC Lead Option- 203 (Dimensions are shown in millimeters (inches))



TO-247AC package is not recommended for Surface Mount Application.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFETs](#) category:

Click to view products by [Infineon](#) manufacturer:

Other Similar products are found below :

[MCH3443-TL-E](#) [MCH6422-TL-E](#) [PMV32UP215](#) [NTNS3A92PZT5G](#) [IRFD120](#) [2SK2464-TL-E](#) [2SK3818-DL-E](#) [2SJ277-DL-E](#)
[MIC4420CM-TR](#) [IRFS350](#) [IPS70R2K0CEAKMA1](#) [AON6932A](#) [TS19452CS RL](#) [2SK2614\(TE16L1,Q\)](#) [EFC2J004NUZTDG](#)
[DMN1053UCP4-7](#) [NTE2384](#) [2N7000TA](#) [743-9](#) [US6M2GTR](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN13M9UCA6-7](#)
[STU7N60DM2](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [IPB45P03P4L11ATMA2](#) [BXP4N65F](#) [BXP2N20L](#) [BXP2N65D](#) [SLF10N65ABV2](#)
[CJAC130SN06L](#) [HSBA6054](#) [HSBB6054](#) [HSBB0210](#) [HSBA6901](#) [BSC004NE2LS5](#) [BSZ075N08NS5](#) [LBSS138DW1T1G](#) [AP0903G](#)
[SSM10N954L,EFF\(S](#) [2SK3878\(STA1,E,S\)](#) [TPN6R303NC,LQ\(S](#) [AP3N5R0MT](#) [AP6NA3R2MT](#) [AP3C023AMT](#) [AP6242](#) [HSBB3909](#)
[HSBA3204](#)