

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	36mΩ@10V	70A

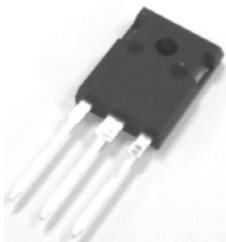
Feature

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Ultra low gate charge cause lower driving requirements
- Excellent package for good heat dissipation

Application

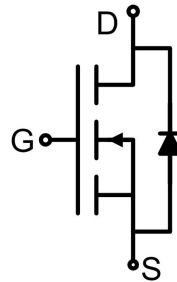
- Power factor correction(PFC)
- Switched mode power supplies(SMPS)
- Uninterruptible power supply(UPS)

Package

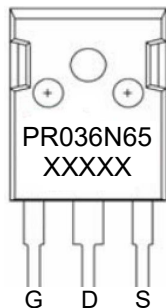


TO-247AB

Circuit diagram



Marking



Absolute maximum ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	650	V
Gate-Source Voltage	V _{GS}	±30	V
Continuous Drain Current	I _D	70	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	49	A
Pulsed Drain Current	I _{DM}	210	A
Power Dissipation	P _D	488	W
Thermal Resistance,Junction-to-Ambient	R _{θJA}	62	°C/W
Thermal Resistance,Junction-to-Case	R _{θJC}	0.31	°C/W
Single pulse avalanche energy	E _{AS}	2117	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =650V, V _{GS} = 0V			5	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±200	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =3mA	3		5	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =35A		30	36	mΩ
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		5410		pF
Output Capacitance	C _{oss}			312		
Reverse Transfer Capacitance	C _{rss}			4.1		
Total Gate Charge	Q _g	V _{DS} =400V, V _{GS} =10V, I _D =40A		102		nC
Gate-Source Charge	Q _{gs}			24		
Gate-Drain Charge	Q _{gd}			34		
Turn-on delay time	t _{d(on)}	V _{DD} =380V, V _{GS} =10V, I _D =40A, R _{GEN} =4Ω		54		nS
Turn-on rise time	t _r			37		
Turn-off delay time	t _{d(off)}			127		
Turn-off fall time	t _f			5		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				70	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =70A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =40A		185		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ¹⁾		1.6		uC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure1. Safe operating area

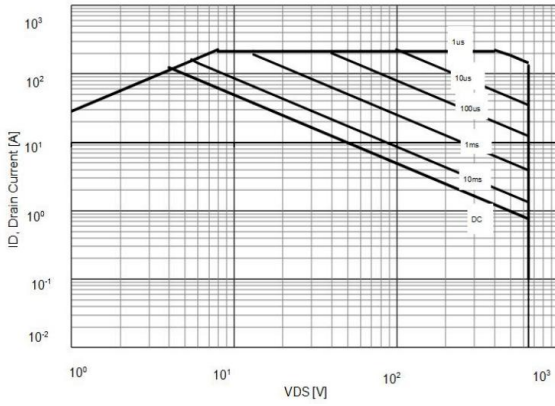


Figure2. Source-Drain Diode Forward Voltage

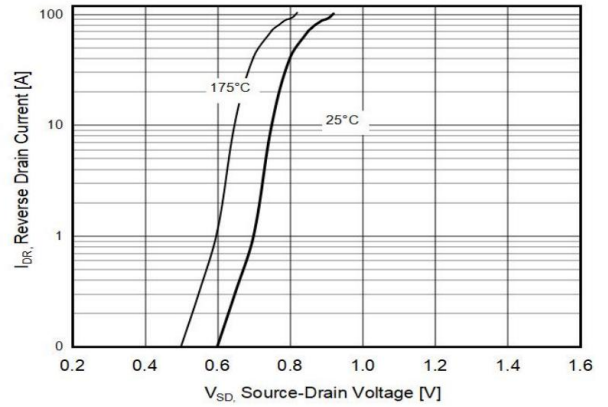


Figure3. Output characteristics

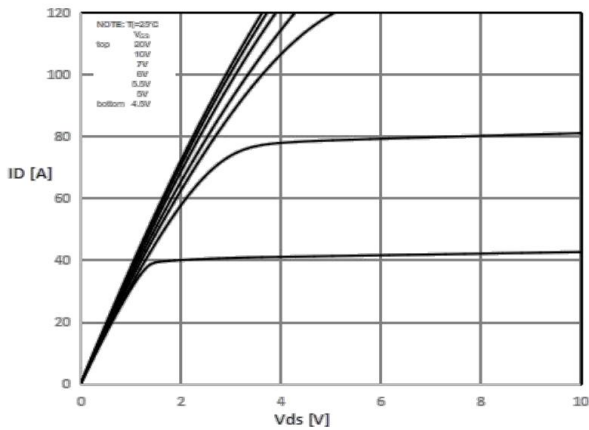


Figure4. Transfer characteristics

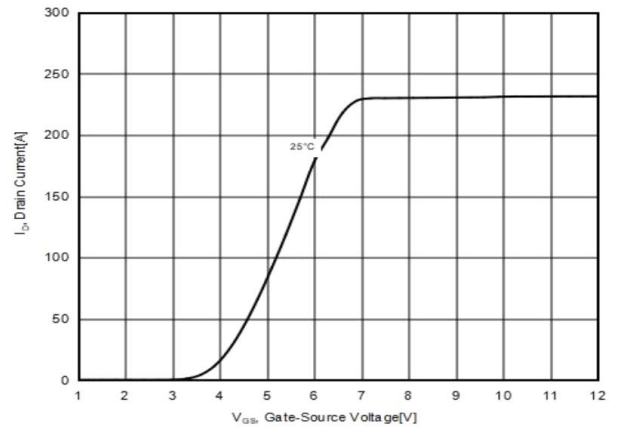


Figure5. Static drain-source on resistance

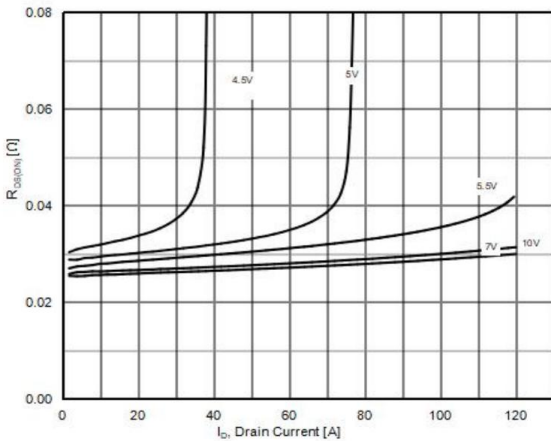
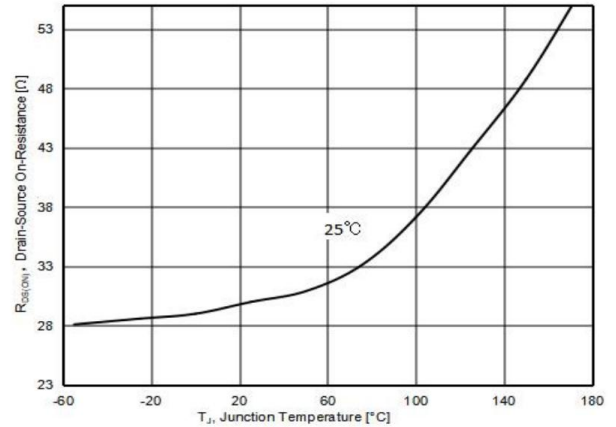


Figure6. RDS(ON) vs Junction Temperature



Typical Characteristics

Figure7. BV_{DSS} vs Junction Temperature

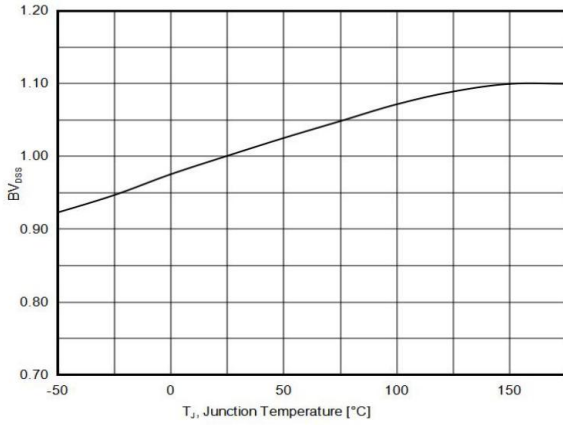


Figure8. Maximum I_D vs Junction Temperature

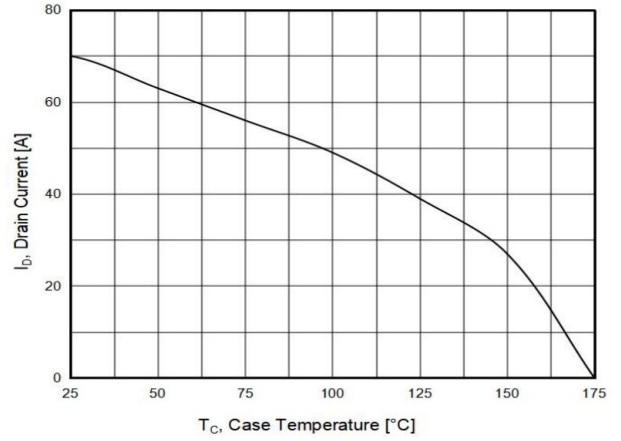


Figure9. Gate charge waveforms

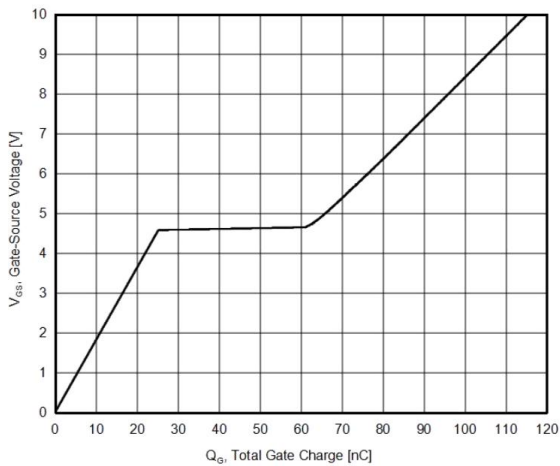
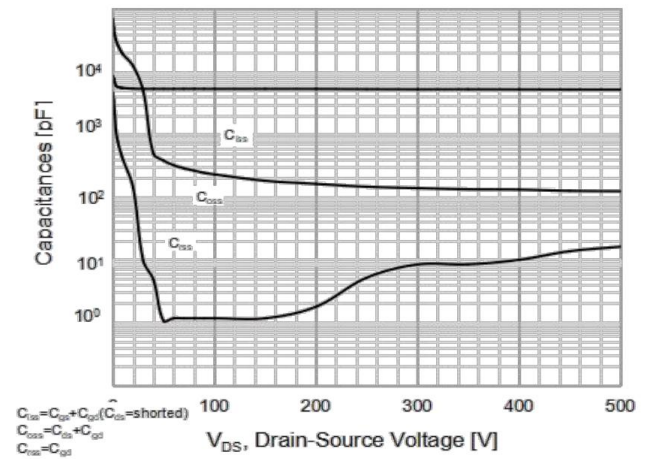
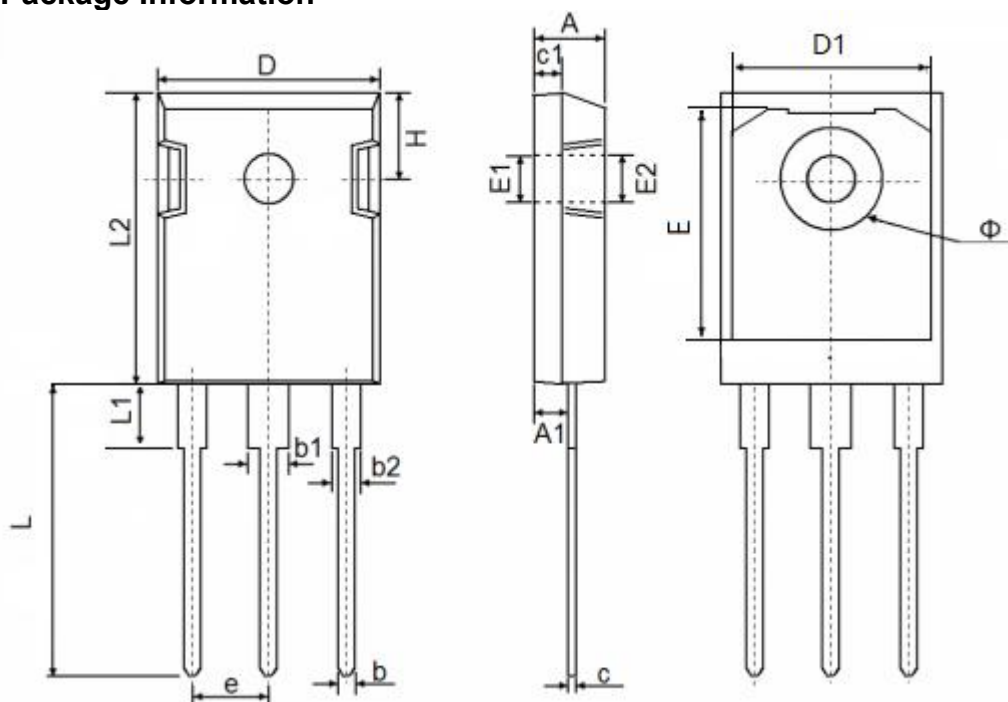


Figure10. Capacitance



TO-247AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.800	5.250	0.189	0.207
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.400	0.110	0.134
b2	1.800	2.420	0.071	0.095
c	0.500	0.700	0.020	0.028
c1	1.900	2.200	0.075	0.087
D	15.700	16.200	0.618	0.638
D1	13.000	14.200	0.512	0.559
E	16.250	17.650	0.640	0.695
E1	3.650	5.500	0.144	0.220
E2	3.650	5.500	0.144	0.220
L	19.800	20.350	0.780	0.801
L1	4.000	4.500	0.157	0.177
L2	20.800	21.200	0.819	0.835
φ	7.180 BSC		0.283 BSC	
e	5.440 BSC		0.214 BSC	
H	5.300	6.300	0.209	0.248