

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
75V	4mΩ@10V	210A

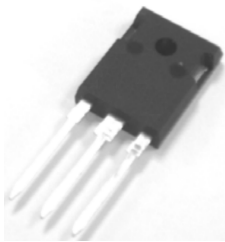
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Application

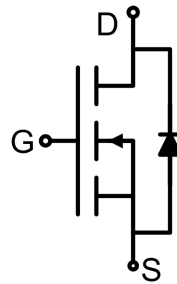
- Automotive applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

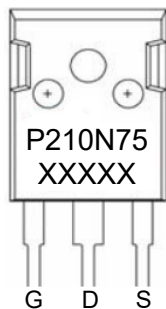


TO-247AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	75	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	210	A
Pulsed Drain Current	I_{DM}	840	A
Power Dissipation	P_D	330	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.455	°C/W
Single pulse avalanche energy	E_{AS}	2200	mJ
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

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

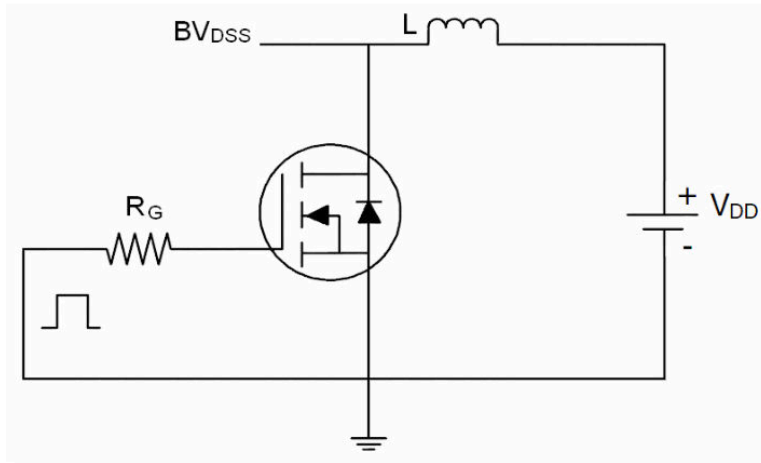
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	75			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 75V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			±200	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2		4	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 40A$		2.9	4	mΩ
Forward transconductance ¹⁾	g_{FS}	$V_{DS} = 25V, I_D = 40A$	100			S
Dynamic characteristics²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		11000		pF
Output Capacitance	C_{oss}			914		
Reverse Transfer Capacitance	C_{rss}			695		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 30A$		250		nC
Gate-Source Charge	Q_{gs}			48		
Gate-Drain Charge	Q_{gd}			98		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 2A, R_L = 15\Omega, R_{GEN} = 2.5\Omega$		23		nS
Turn-on rise time	t_r			190		
Turn-off delay time	$t_{d(off)}$			130		
Turn-off fall time	t_f			120		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{DS}	$V_{GS} = 0V, I_S = 40A$			1.2	V
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ C, I_F = 40A, di/dt = 100A/\mu s$ ¹⁾		48		nS
Reverse Recovery Charge	Q_{rr}			78		nC

Notes:

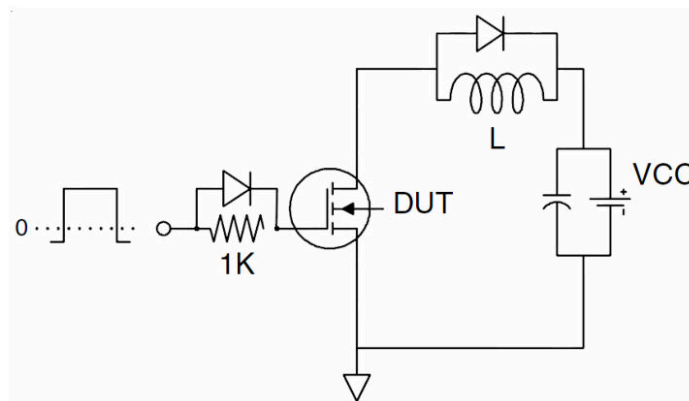
- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

Test Circuit

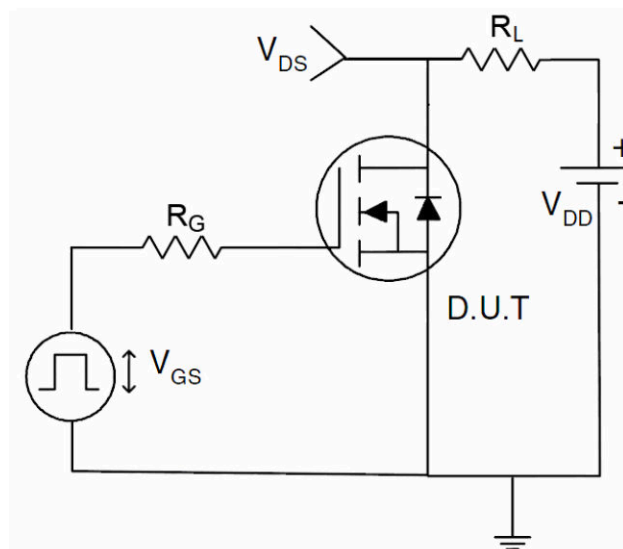
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



Typical Characteristics

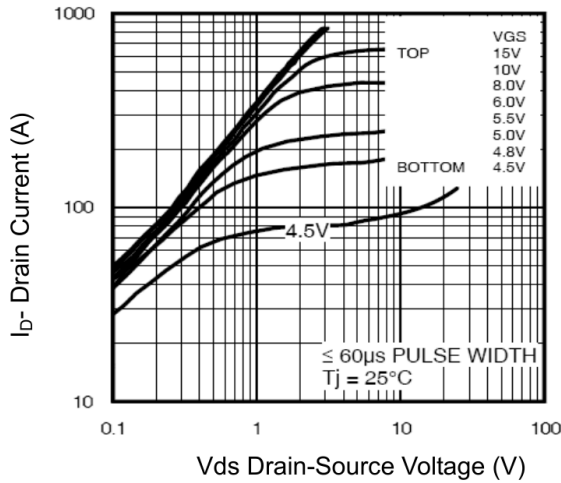


Figure 1 Output Characteristics

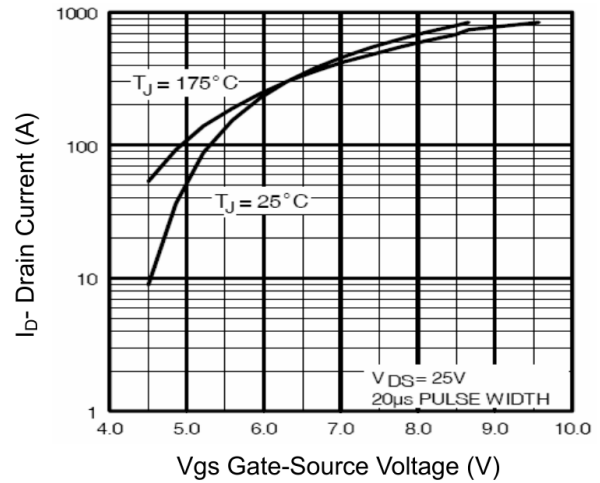


Figure 2 Transfer Characteristics

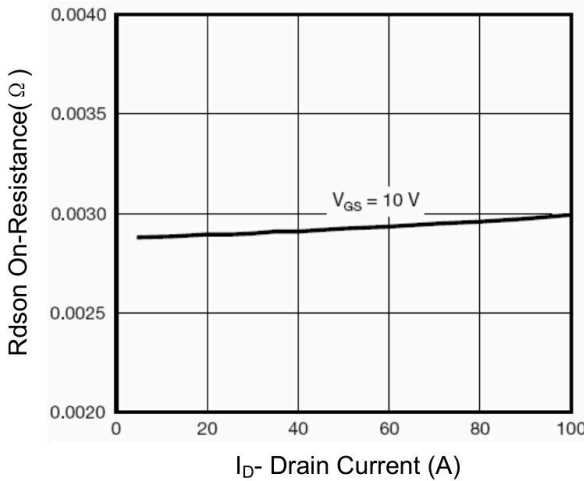


Figure 3 Rdson- Drain Current

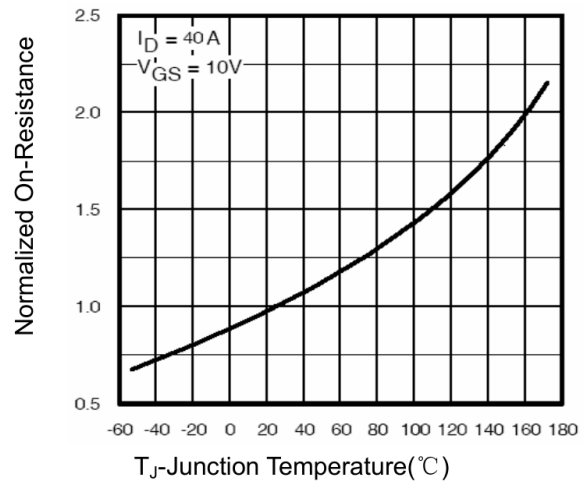


Figure 4 Rdson-Junction Temperature

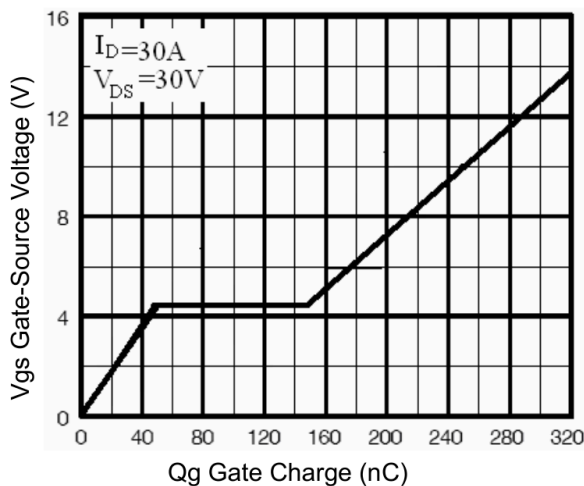


Figure 5 Gate Charge

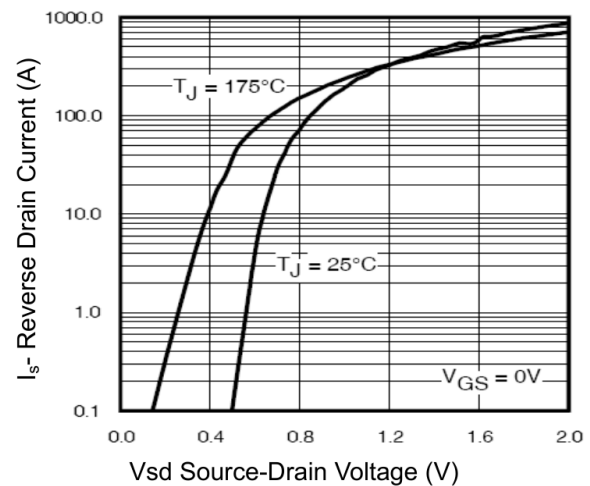


Figure 6 Source- Drain Diode Forward

Typical Characteristics

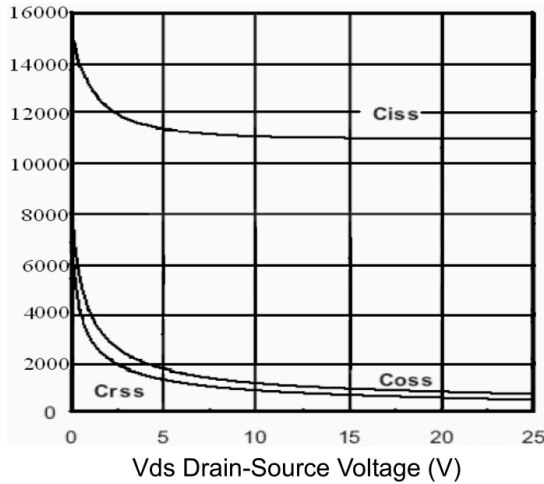


Figure 7 Capacitance vs Vds

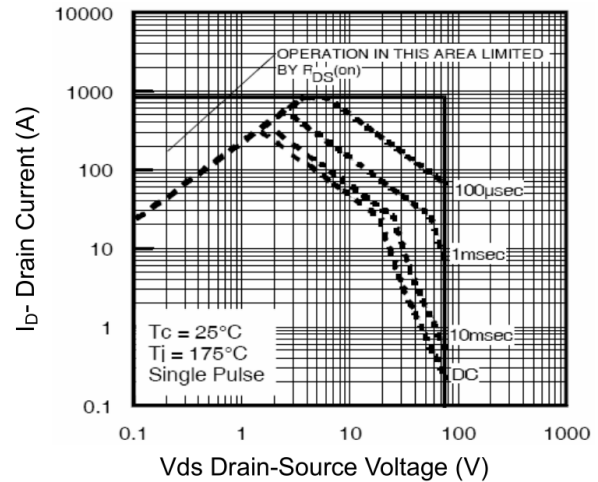


Figure 8 Safe Operation Area

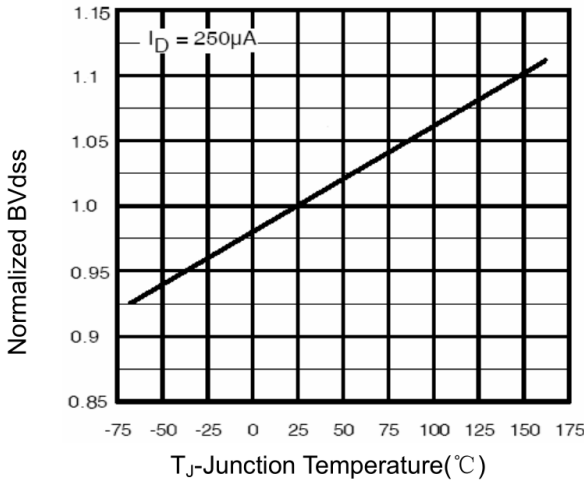


Figure 9 BV_{DSS} vs Junction Temperature

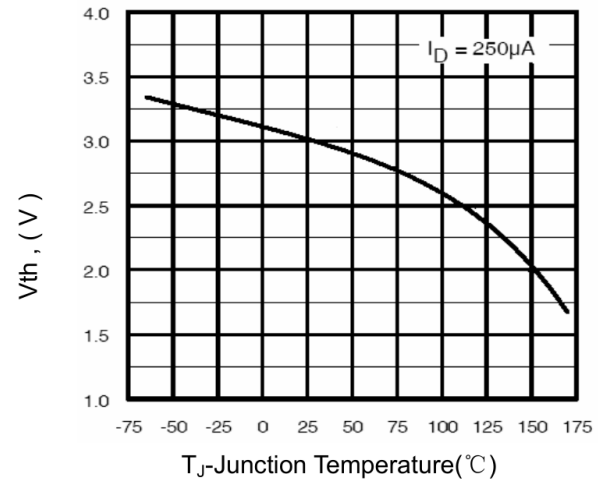


Figure 10 V_{GS(th)} vs Junction Temperature

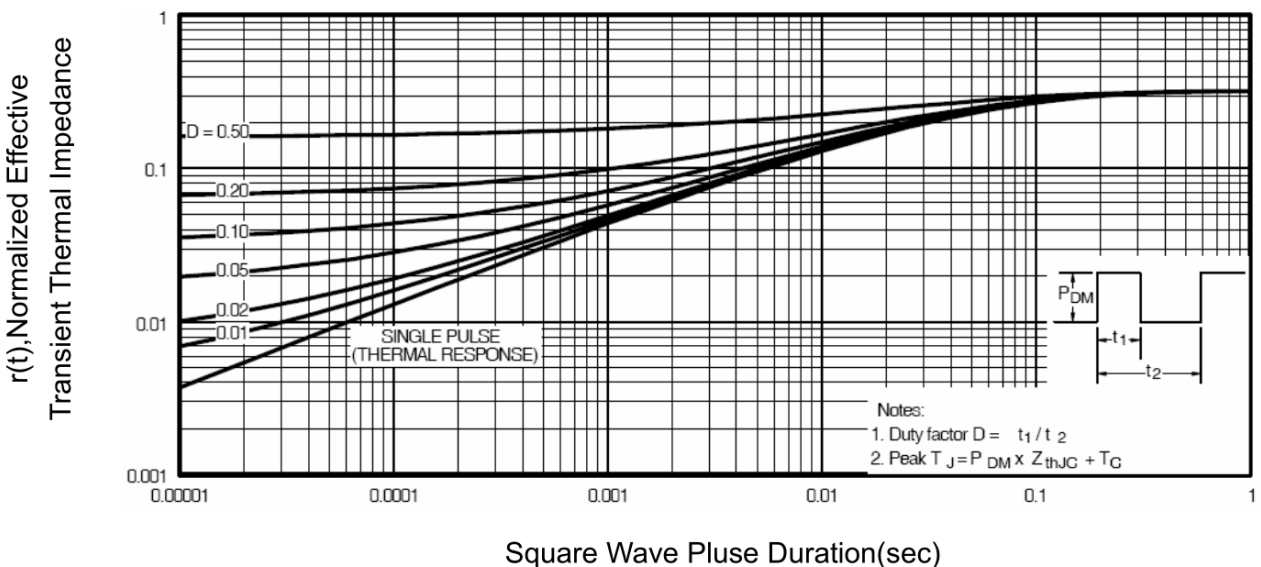
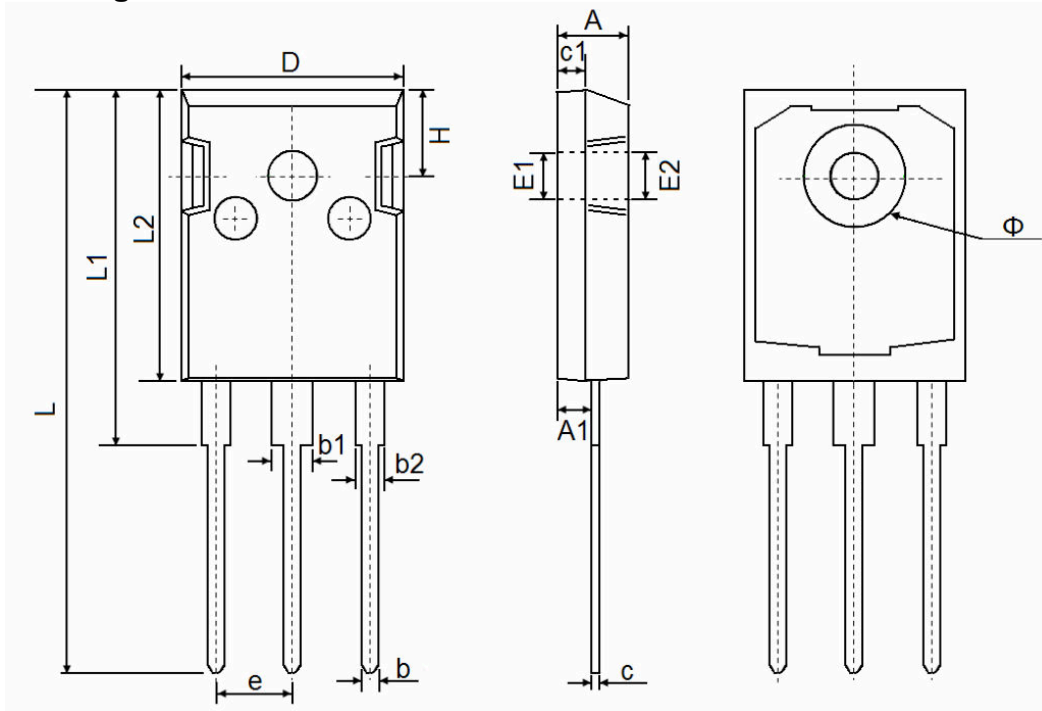


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-247AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	