

Product Summary

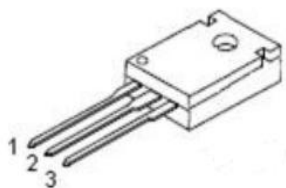
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	60mΩ@10V	47A

Feature

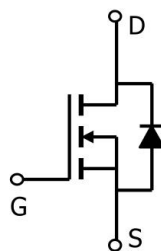
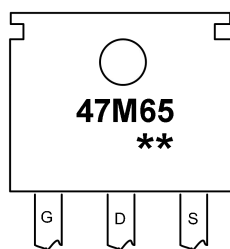
- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

- PD charger
- Large screen display
- Telecom power
- Server power

Package

TO-247(1:G 2:D 3:S)

Circuit diagram**Marking**

47M65 : Product code
****** : Week code

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

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	650	V
Gate source voltage	V_{GS}	± 30	V
Continuous drain current($T_c=25^\circ\text{C}$)	I_D	47	A
Continuous drain current($T_c=100^\circ\text{C}$)	I_D	29	A
Pulsed drain current	I_{DM}	188	A
Power dissipation($T_c=25^\circ\text{C}$)	P_D	391	W
Single pulsed avalanche energy ¹⁾	E_{AS}	1160	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.32	$^\circ\text{C/W}$
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^\circ\text{C}$

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

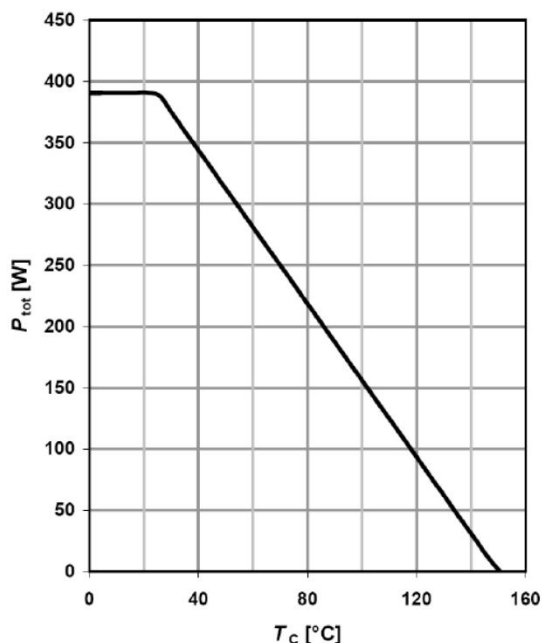
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	ID = 250μA, VGS = 0V	650	-	-	V
Drain Cut-Off Current	IDSS	VDS = 480V, VGS = 0V	-	-	1	μA
Gate Leakage Current	IGSS	VGS = ±30V, VDS = 0V	-	-	±0.1	
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	2	3	4	V
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 23A	-	60	70	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS =25V, VGS = 0V, f = 1.0MHz	-	3080	-	pF
Output Capacitance	Coss		-	140	-	
Reverse Transfer Capacitance	Crss		-	7	-	
Switching Characteristics						
Total Gate Charge	Qg	VDS=480V , VGS=10V , ID=23A	-	194	-	nC
Gate-Source Charge	Qgs		-	35	-	
Gate-Drain Charge	Qgd		-	90	-	
Turn-On Delay Time	td(on)	VGS = 10V, VDS = 480V, ID=23A , RG = 20Ω	-	22	-	ns
Rise Time	tr		-	10	-	
Turn-Off Delay Time	td(off)		-	90	-	
Fall Time	tf		-	5	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	IS = 1A, VGS = 0V	-	-	1.2	V
Reverse Recovery Time	Trr	VR=400V,IS=10A,di/dt=100A/us		527		ns

Note:

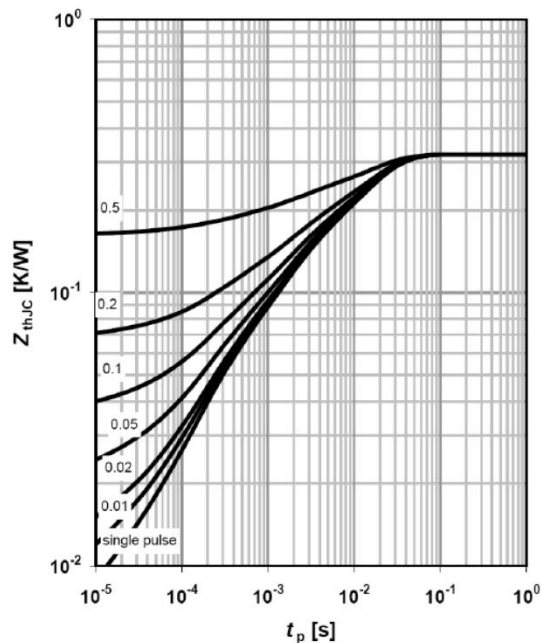
- E_{AS} is tested at starting $T_j = 25^\circ\text{C}$, $V_{DD} = 100\text{V}, V_{GS} = 10\text{V}, L = 0.5\text{mH}, R_g = 25\Omega$;



Typical Characteristics

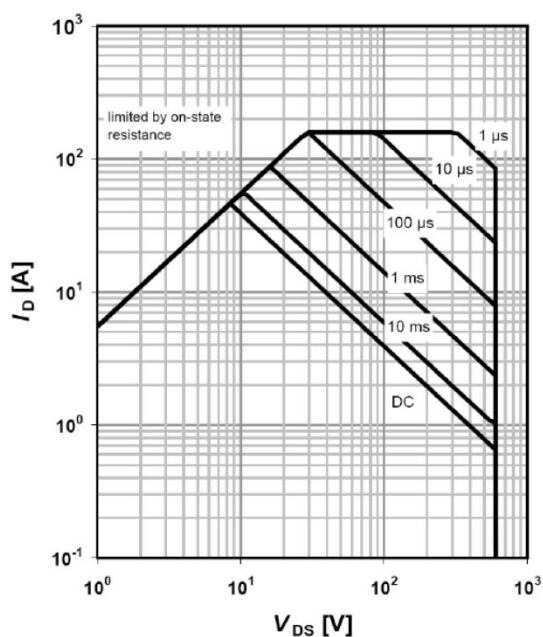


$$P_{\text{tot}} = f(T_c)$$



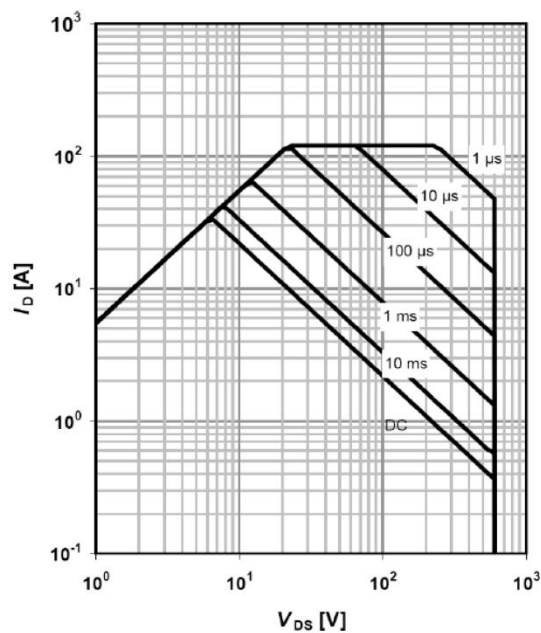
$$Z_{\text{thJC}} = f(t_p); \text{ parameter: } D = t_p / T$$

Safe operating area $T_c = 25^\circ\text{C}$

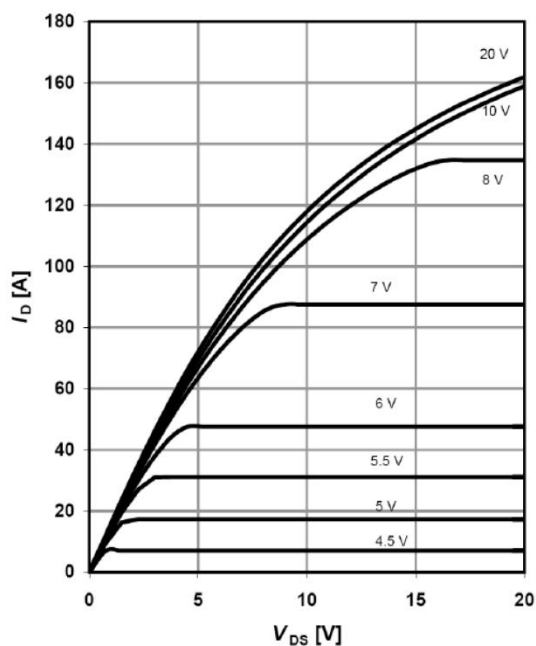


$$I_D = f(V_{DS}); T_c = 25^\circ\text{C}; V_{GS} > 7\text{V}; D = 0; \text{ parameter } t_p$$

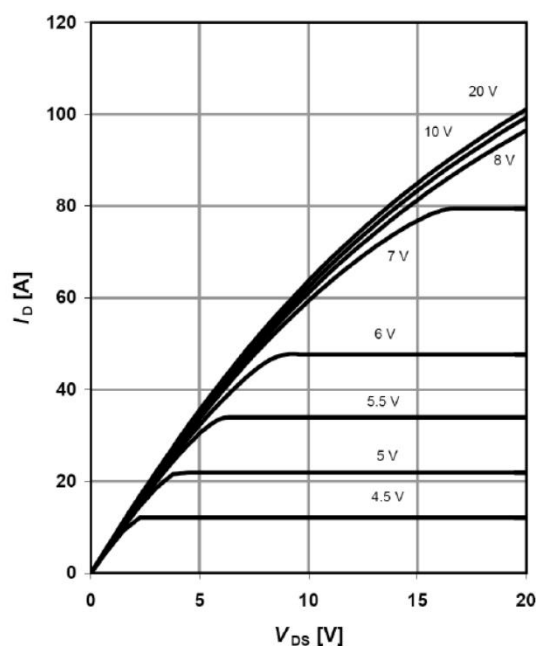
Safe operating area $T_c = 80^\circ\text{C}$



$$I_D = f(V_{DS}); T_c = 80^\circ\text{C}; V_{GS} > 7\text{V}; D = 0; \text{ parameter } t_p$$

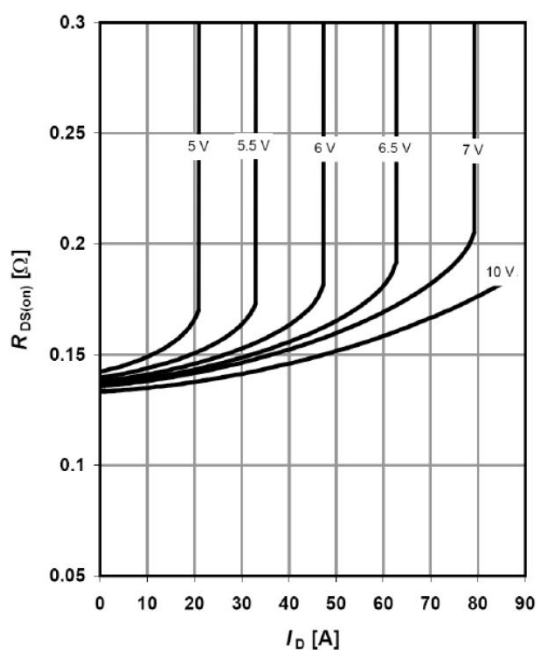


$I_D = f(V_{DS})$; $T_j = 25\text{ }^{\circ}\text{C}$; parameter: V_{GS}



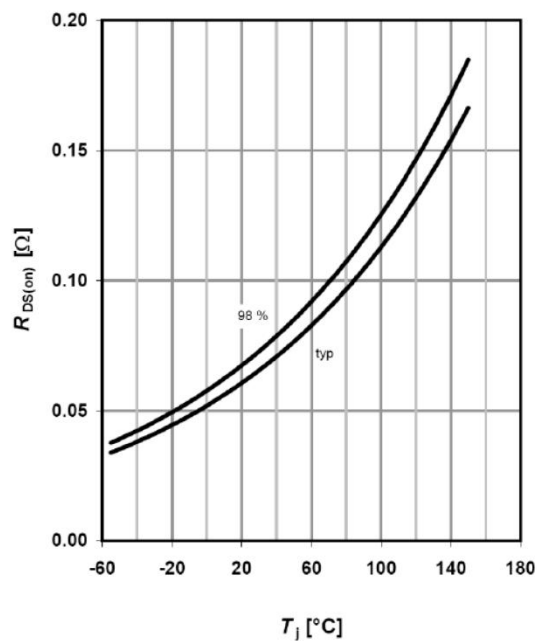
$I_D = f(V_{DS})$; $T_j = 125\text{ }^{\circ}\text{C}$; parameter: V_{GS}

Typ. drain-source on-state resistance



$R_{DS(on)} = f(I_D)$; $T_j = 125\text{ }^{\circ}\text{C}$; parameter: V_{GS}

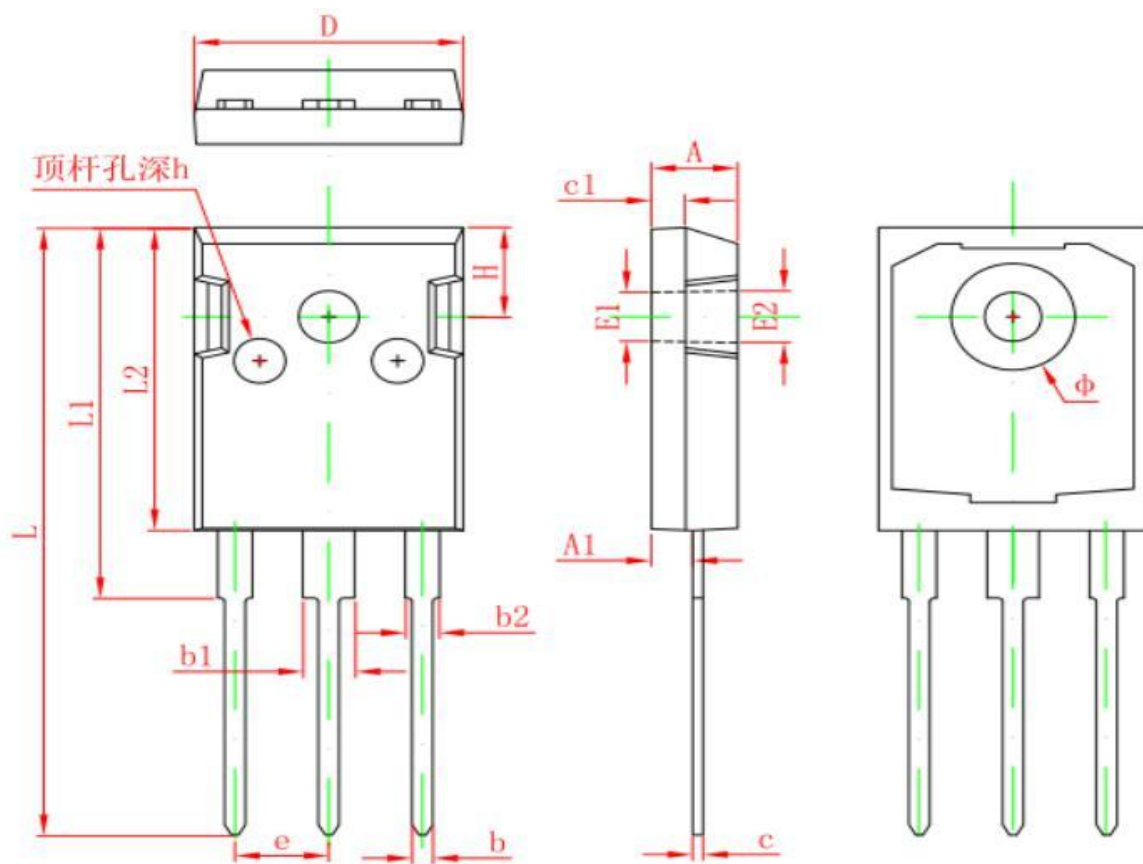
Drain-source on-state resistance



$R_{DS(on)} = f(T_j)$; $I_D = 17.6\text{ A}$; $V_{GS} = 10\text{ V}$



TO-247 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.	
h	0.000	0.300	0.000	0.012