



Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	150mΩ@10V	20A

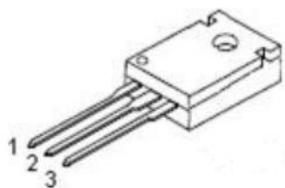
Feature

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

Applications

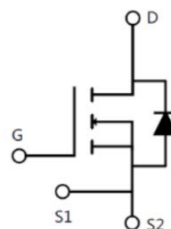
- PD charger
- Large screen display
- Telecom power
- Server power

Package

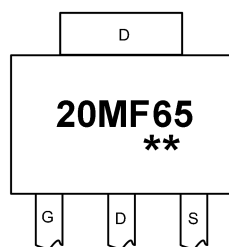


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



20MF65 : 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(Tc=25°C)	I_D	20	A
Continuous drain current(Tc=100°C)	I_D	12.5	A
Pulsed drain current	I_{DM}	80	A
Power dissipation(Tc=25°C)	P_D	34	W
Single pulsed avalanche energy ¹⁾	E_{AS}	578	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	3.68	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

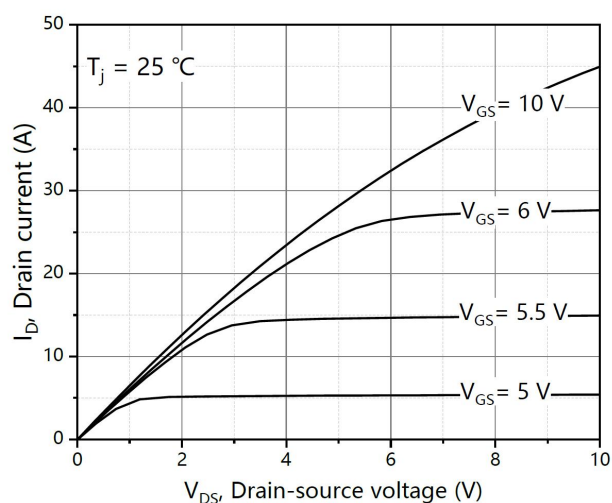
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250μA, V _{GS} = 0V	650	-	-	V
Drain Cut-Off Current	I _{DSS}	V _{DS} = 520V, V _{GS} = 0V	-	-	1	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±30V, V _{DS} = 0V	-	-	±0.1	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.5	3.5	4.5	V
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 10A	-	150	190	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} = 0V, f = 1.0MHz	-	1745	-	pF
Output Capacitance	C _{oss}		-	102	-	
Reverse Transfer Capacitance	C _{rss}		-	2.5	-	
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =400V , V _{GS} =10V , I _D =10A	-	45.5	-	nC
Gate-Source Charge	Q _{gs}		-	10.5	-	
Gate-Drain Charge	Q _{gd}		-	9	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DS} = 400V, I _D =10A , R _G = 2Ω	-	31	-	ns
Rise Time	t _r		-	20	-	
Turn-Off Delay Time	t _{d(off)}		-	83	-	
Fall Time	t _f		-	9	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V	-	-	1.2	V
Reverse Recovery Time	T _{rr}	V _R =400V,I _S =10A,di/dt=100A/us		190		ns

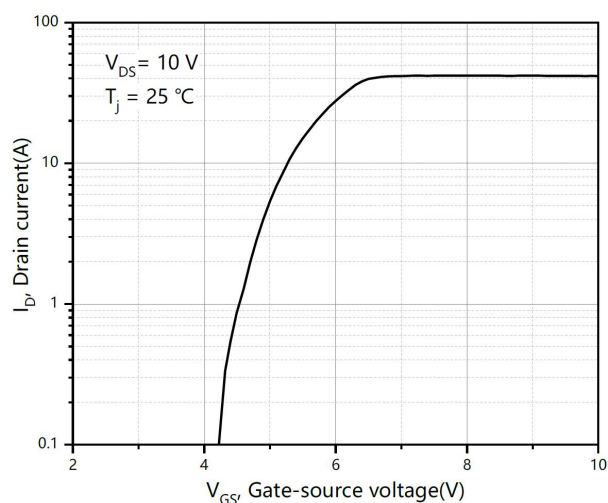
Note:

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

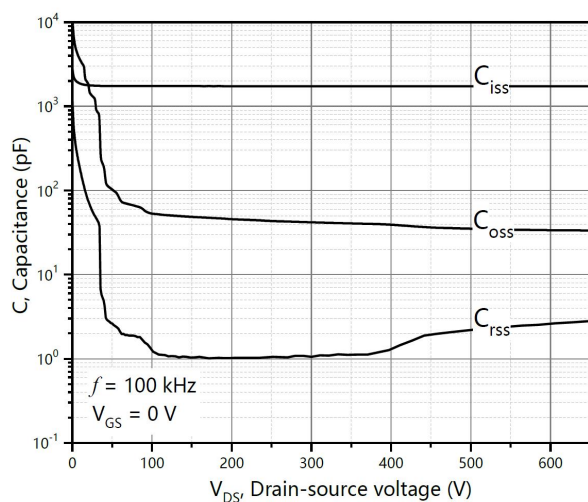
Typical Characteristics



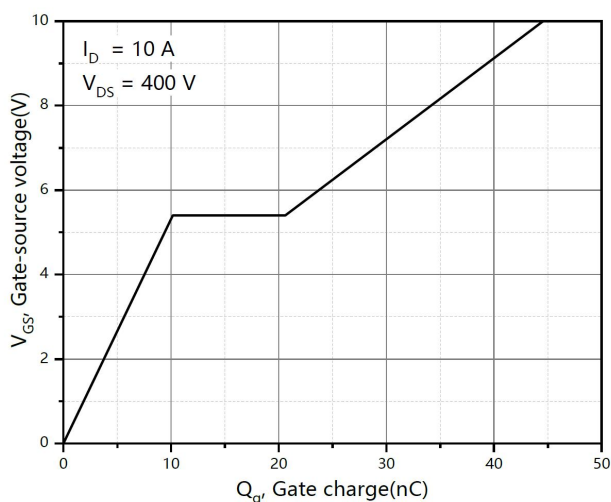
Typ. output characteristics



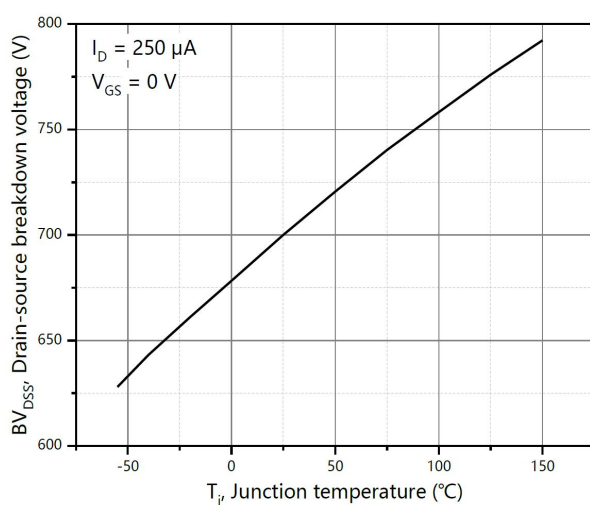
Typ. transfer characteristics



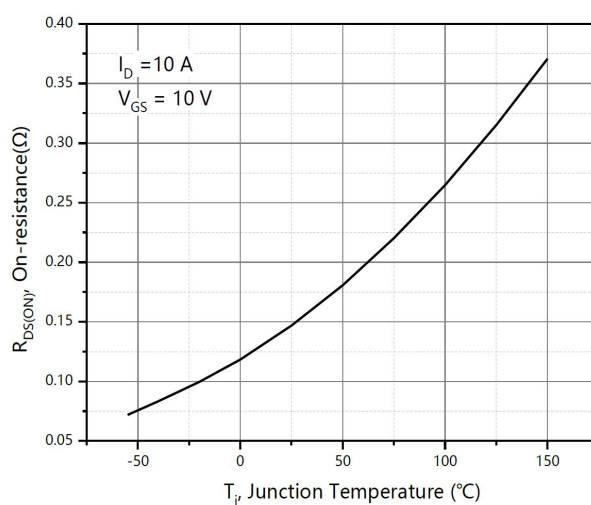
Typ. capacitances



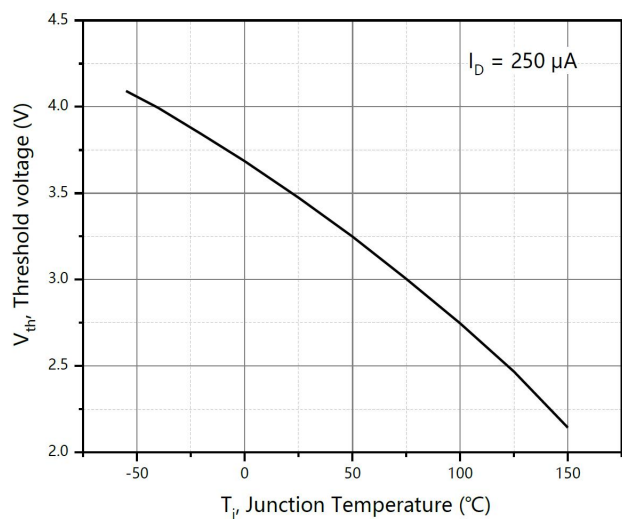
Typ. gate charge



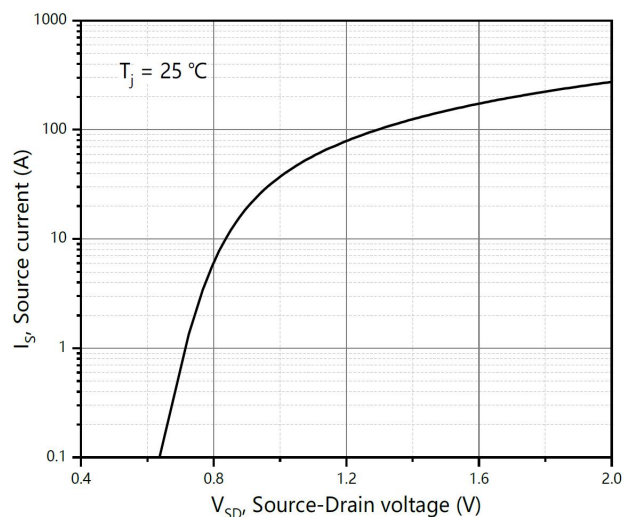
Drain-source breakdown voltage



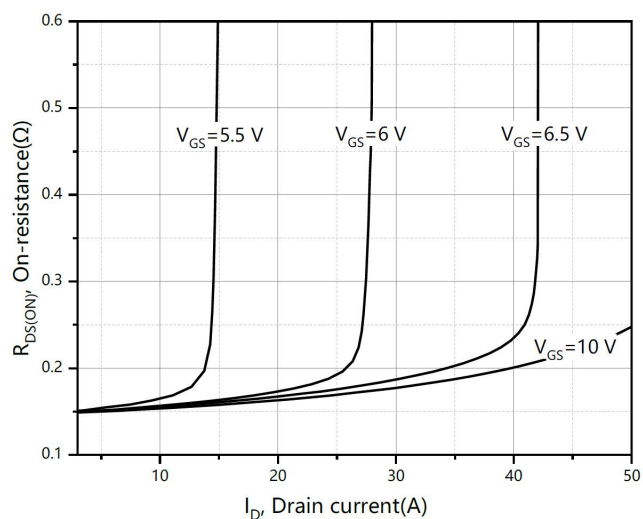
Drain-source on-state resistance



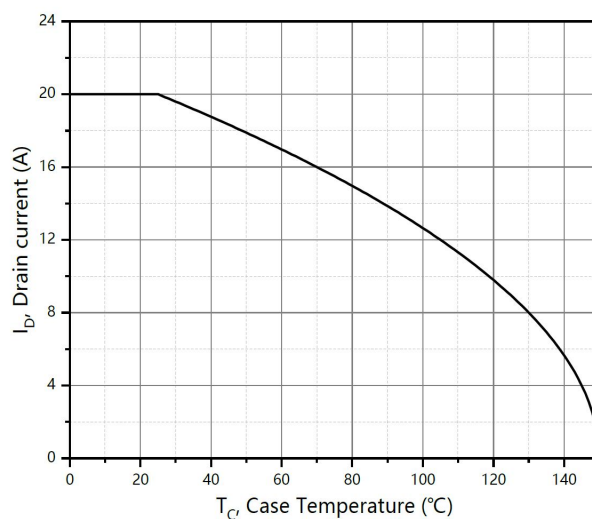
Threshold voltage



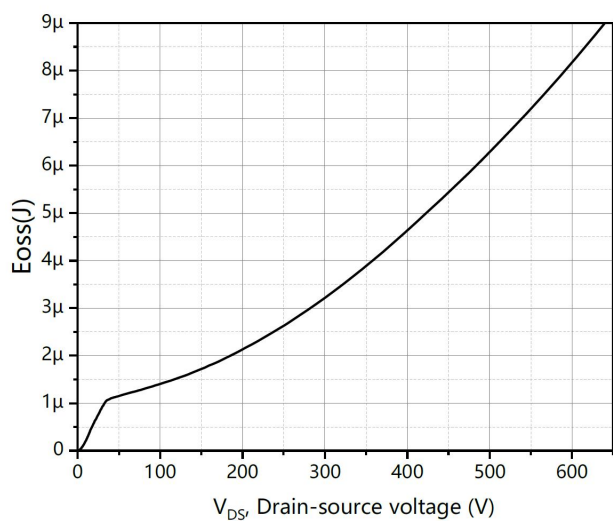
Forward characteristic of body diode



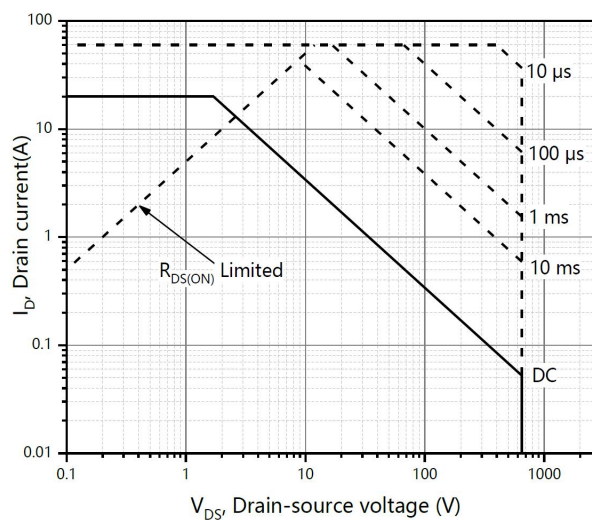
Drain-source on-state resistance



Drain current



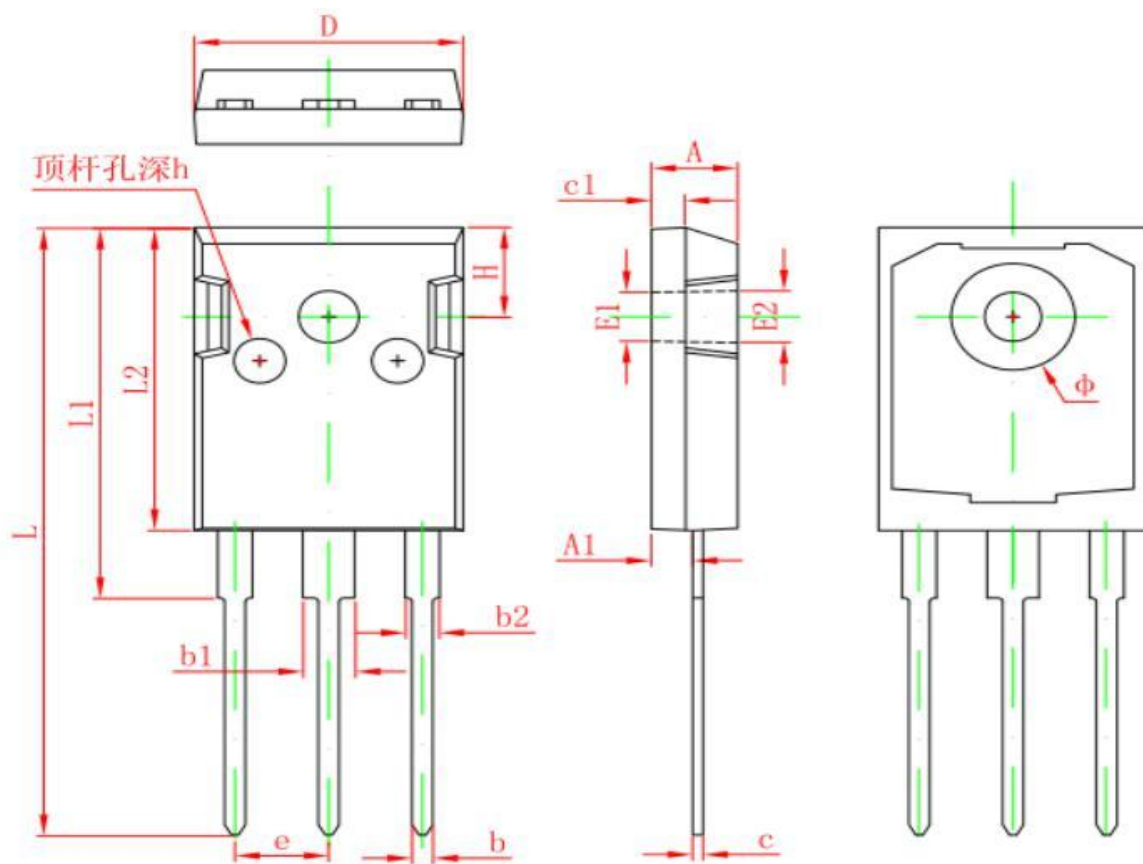
Safe operation area $T_C=25^{\circ}C$



Safe operation area $T_C=25^{\circ}C$



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