

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
250V	10mΩ@10V	160A



合肥矽普半导体
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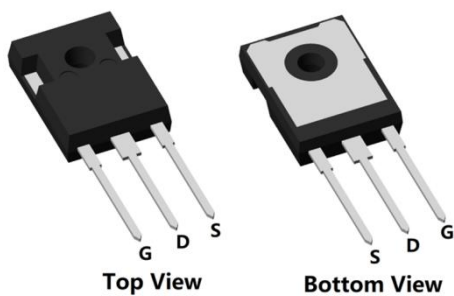
Feature

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

Applications

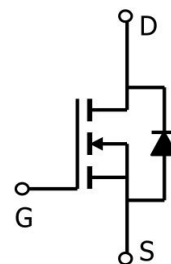
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

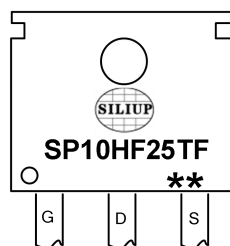


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



SP10HF25TF :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tube
SP10HF25TF	TO-247	30

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	250	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	160	A
Continuous Drain Current (Tc=100°C)	I_D	107	A
Pulsed Drain Current	I_{DM}	640	A
Single Pulse Avalanche Energy ¹	E_{AS}	1406	mJ
Power Dissipation (Tc=25°C)	P_D	445	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.28	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

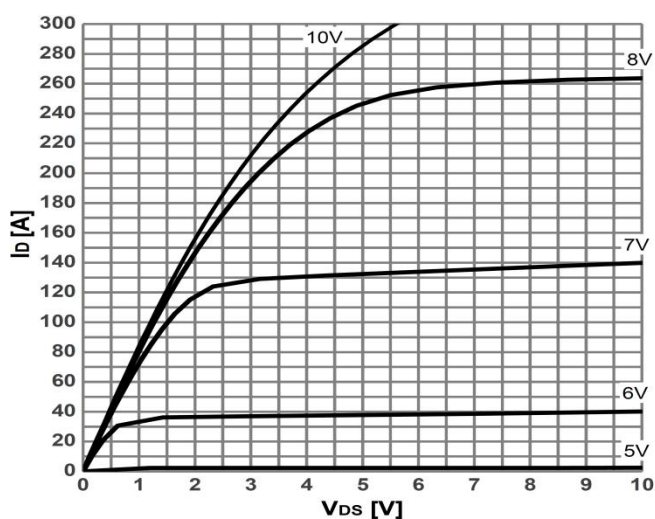
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0 V , ID=250uA	250	285	-	V
Drain-Source Leakage Current	IDSS	VDS=200V , VGS=0V , TJ=25℃	-	-	10	uA
Gate-Source Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	3	4	5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=10V , ID=40A	-	10	12.5	mΩ
Dynamic characteristics						
Input Capacitance	Ciss	VDS=50V , VGS=0V , f=1MHz	-	5130	-	pF
Output Capacitance	Coss		-	351	-	
Reverse Transfer Capacitance	Crss		-	21	-	
Switching Characteristics						
Total Gate Charge	Qg	VDS=200V , VGS=0-10V , ID=40A	-	85	-	nC
Gate-Source Charge	Qgs		-	28	-	
Gate-Drain Charge	Qgd		-	22	-	
Turn-On Delay Time	Td(on)	VDD=200V, VGS=10V , RG=1.6Ω, ID=40A	-	33	-	nS
Rise Time	Tr		-	15	-	
Turn-Off Delay Time	Td(off)		-	75	-	
Fall Time	Tf		-	8	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	160	A
Reverse recover time	Trr	IS=40A, di/dt=100A/us, Tj=25℃	-	119	-	nS
Reverse recovery charge	Qrr		-	0.55	-	nC

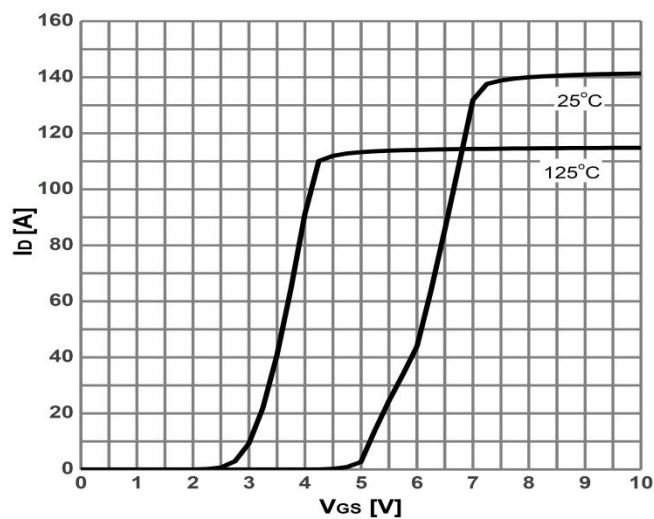
Note :

1. The test condition is $V_{DD}=50\text{V}, V_{GS}=10\text{V}, L=0.5\text{mH}, R_G=25\Omega$

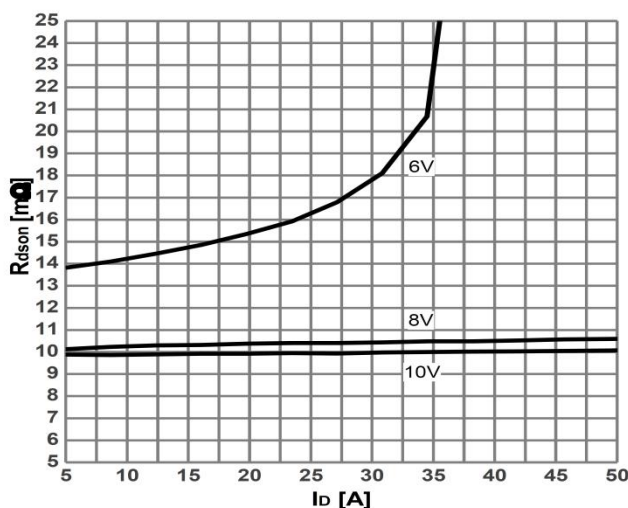
Typical Characteristics



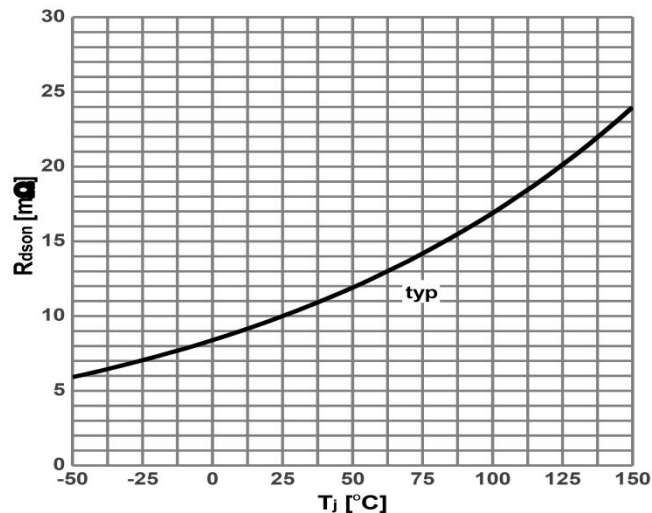
Typ. output characteristics



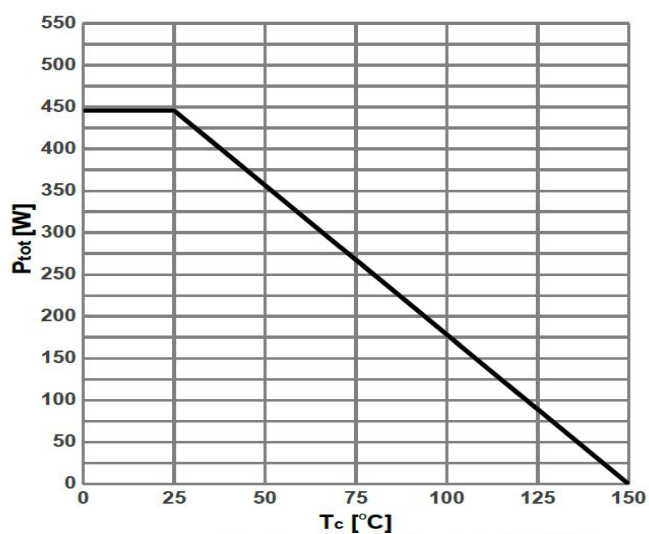
Typ. transfer characteristics



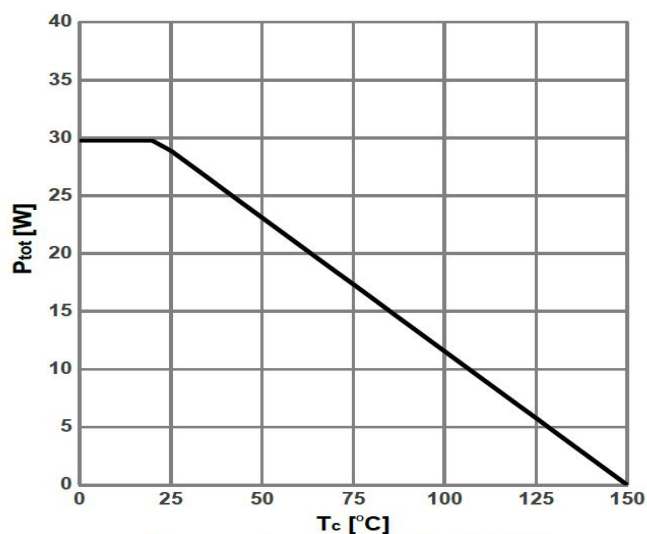
Typ. drain-source on-state resistance



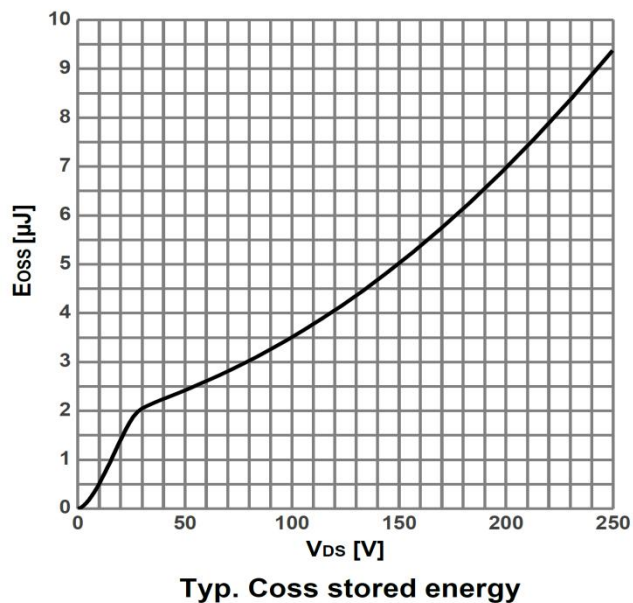
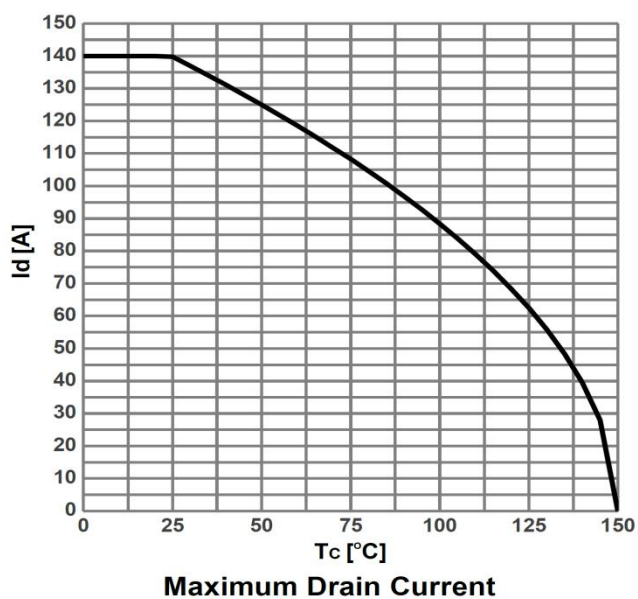
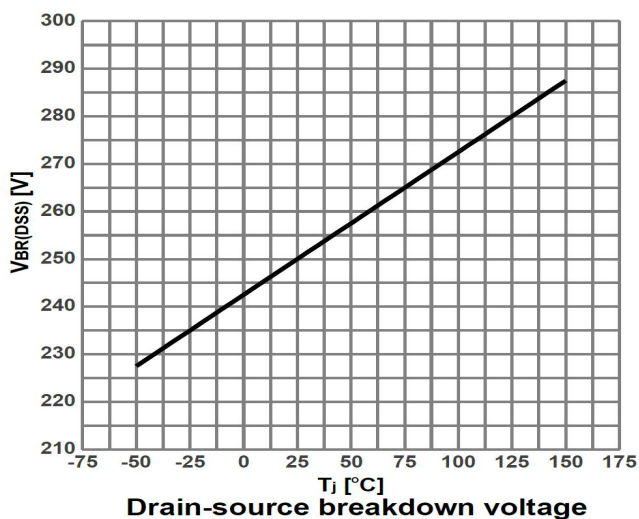
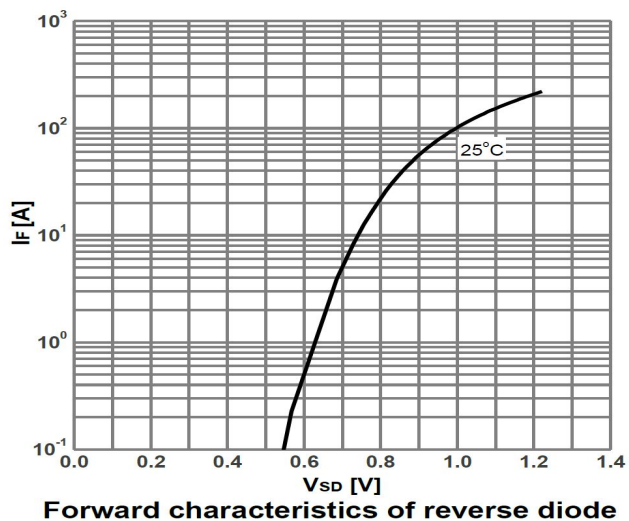
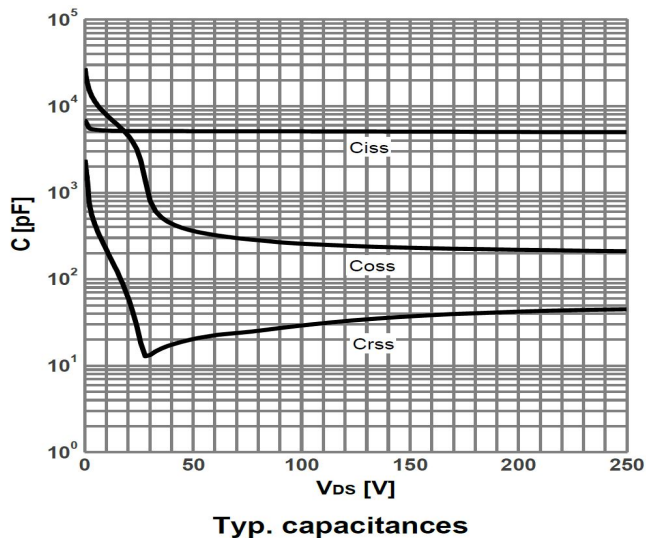
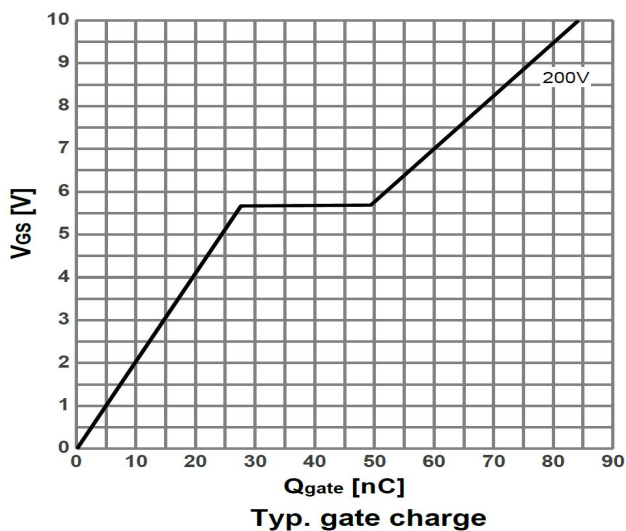
Drain-source on-state resistance

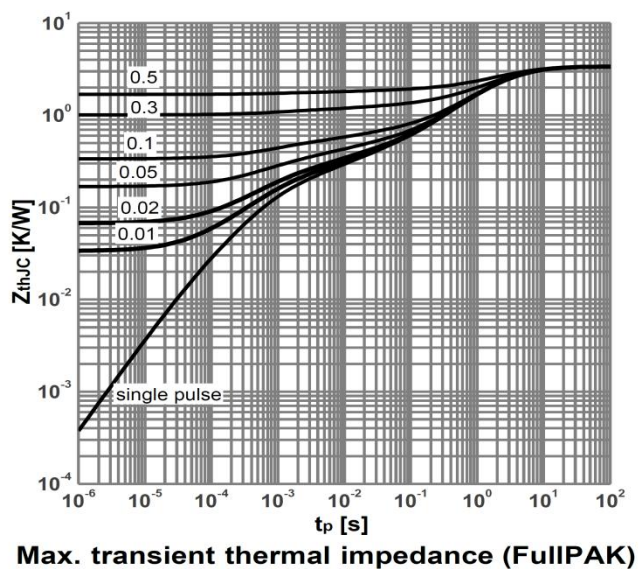
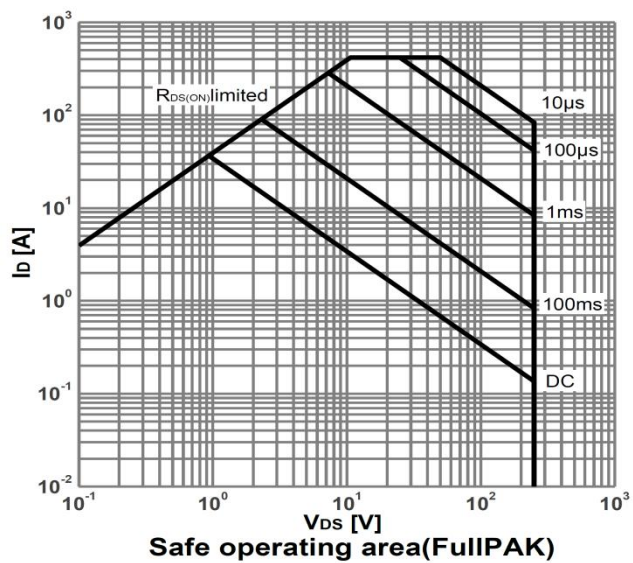


Power dissipation (Non FullPAK)

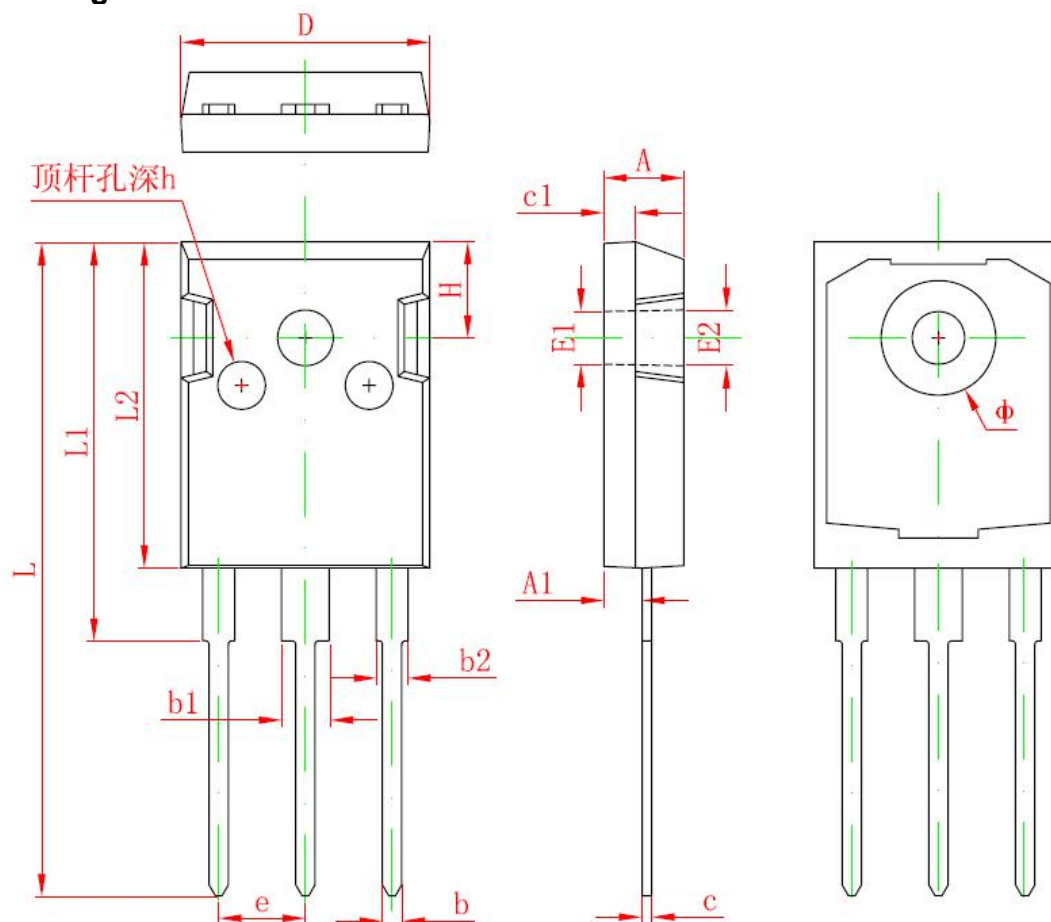


Power dissipation (FullPAK)





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
b2	1.800	2.200	0.071	0.087
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
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.	
H1	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012