

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D (T_c=100^{\circ}C)$
1200V	45mΩ@18V	45A



合肥矽普半导体

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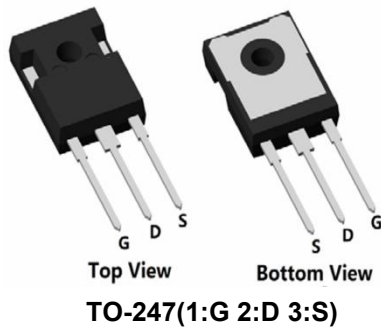
Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(on)}$
- Easy to Parallel
- Simple to Drive
- RoHS Compliant
- Wafer level burn in&FT high temperature test
- AECQ-101 Qualified

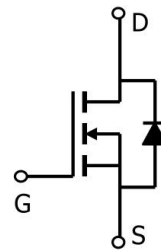
Applications

- Power Factor Correction Modules
- Switch Mode Power Supplies
- Photovoltaic Inverter
- UPS Power Supply
- Motor Drive
- High Voltage DC/DC Converter
- Switching Mode Power Supply

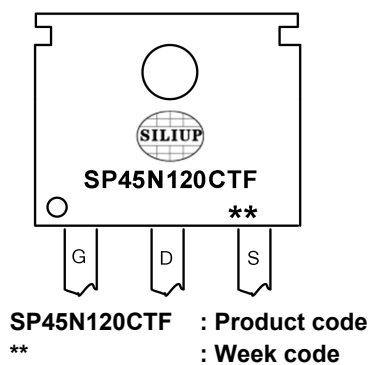
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tube
SP45N120CTF	TO-247	30

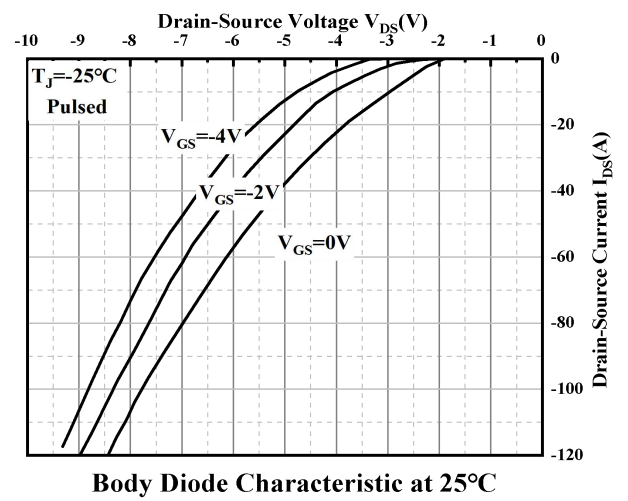
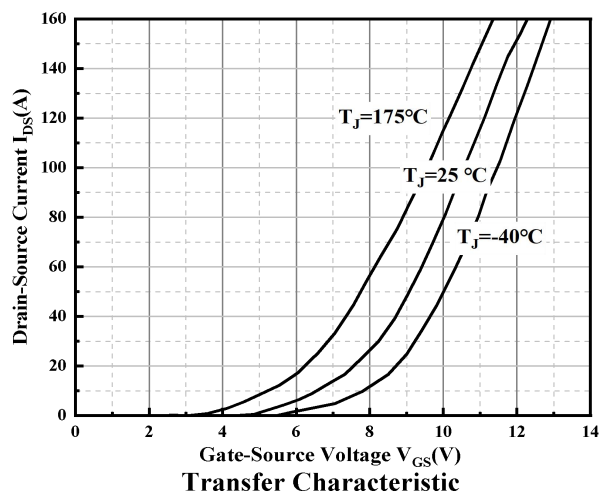
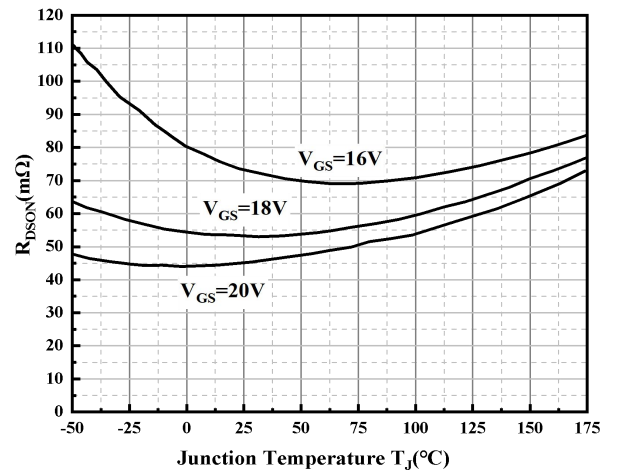
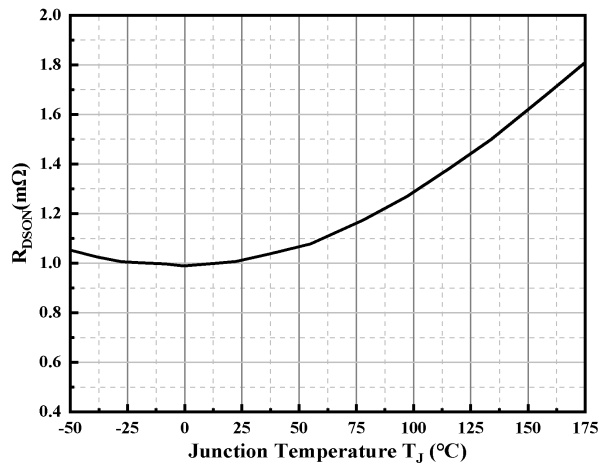
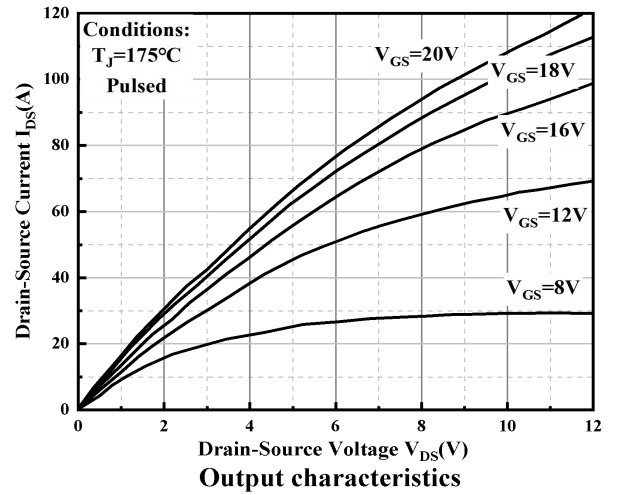
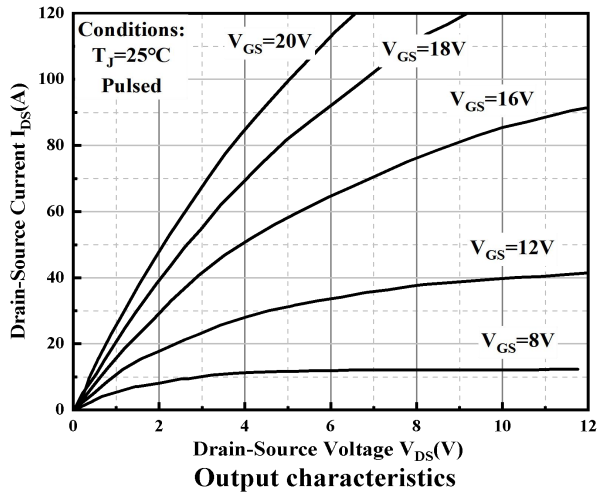
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

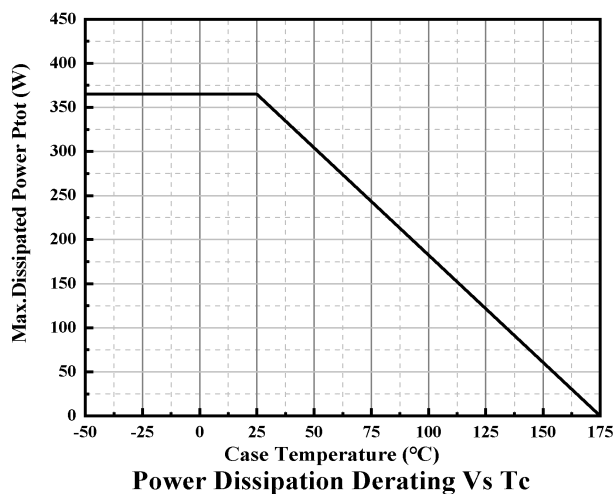
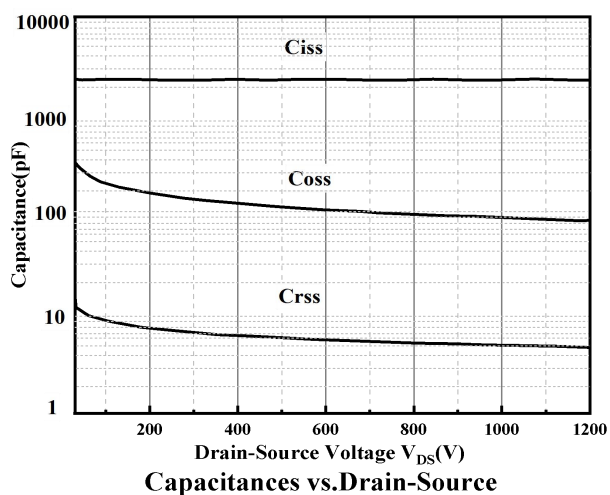
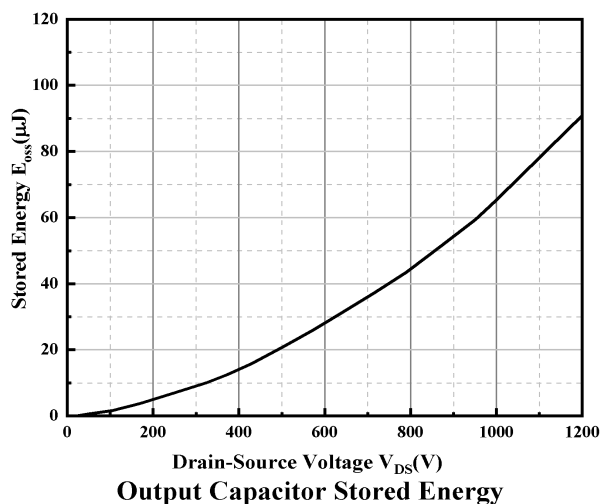
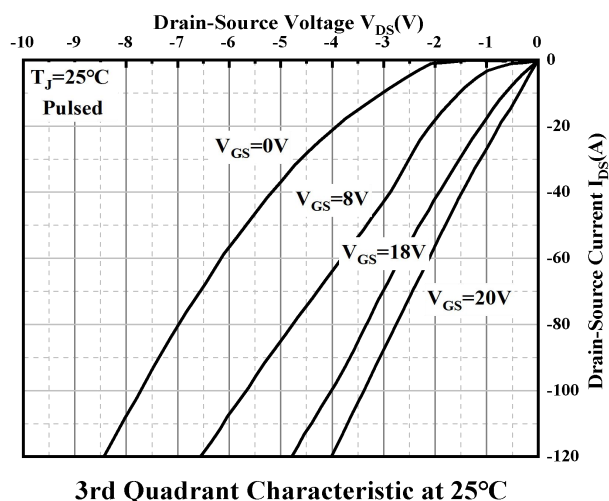
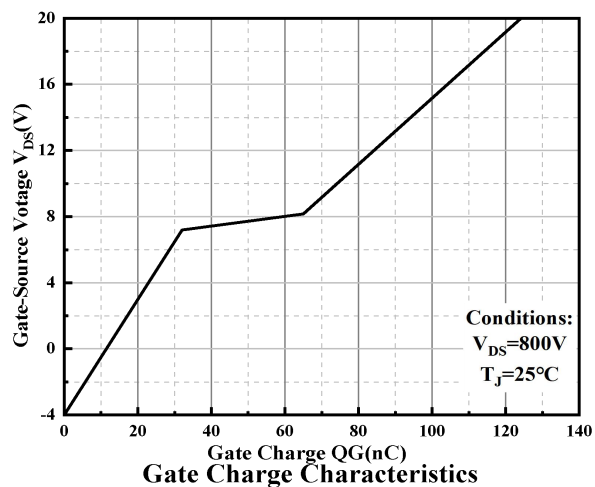
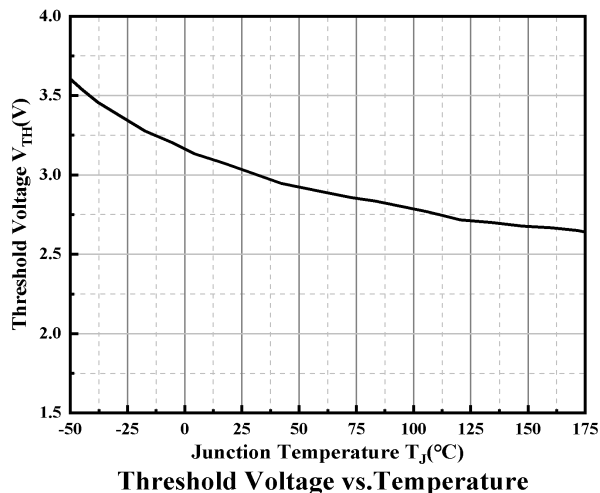
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	V_{GSMAX}	-10/+22	V
Recommend Gate-Source Voltage	V_{GSop}	-5/+18	V
Continuous Drain Current(Tc=25°C)	I_D	60	A
Continuous Drain Current(Tc=100°C)	I_D	45	A
Pulsed Drain Current	I_{DM}	100	A
Total Power Dissipation(Tc=25°C)	P_D	395	W
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.38	°C/W
Storage Temperature Range	T_{STG}	-55 to 175	°C
Operating Junction Temperature Range	T_J	-55 to 175	°C

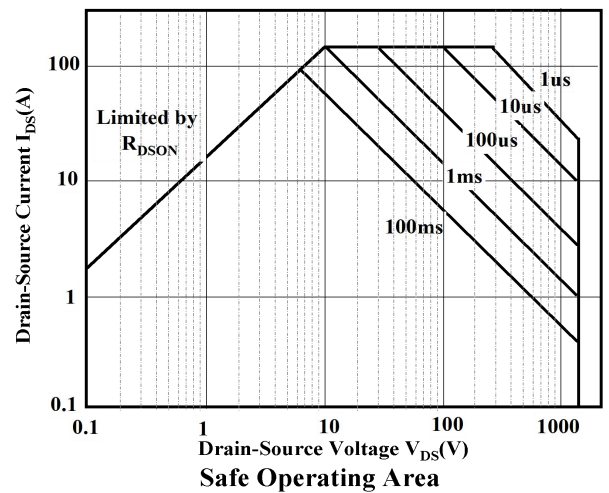
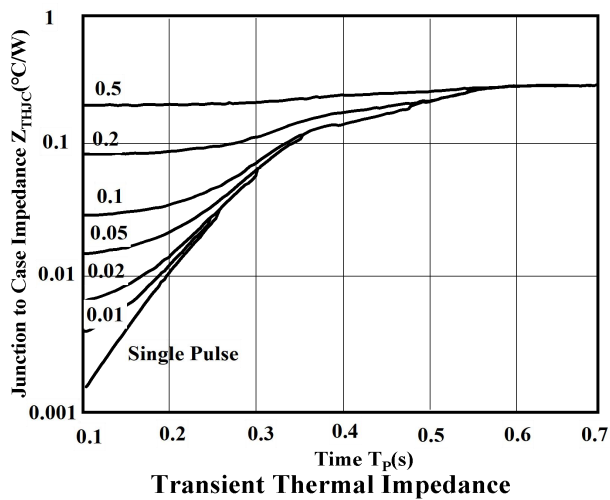
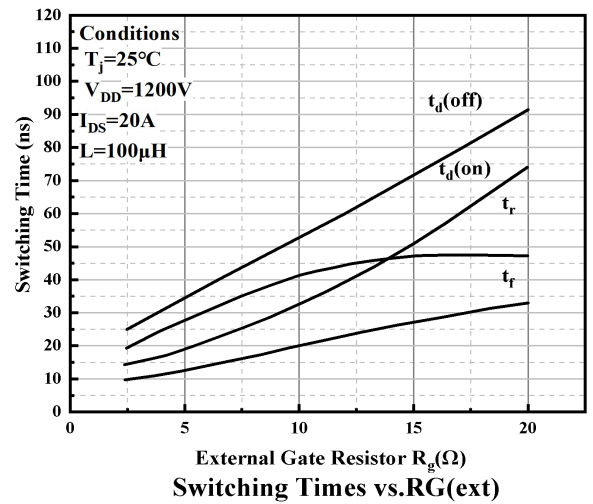
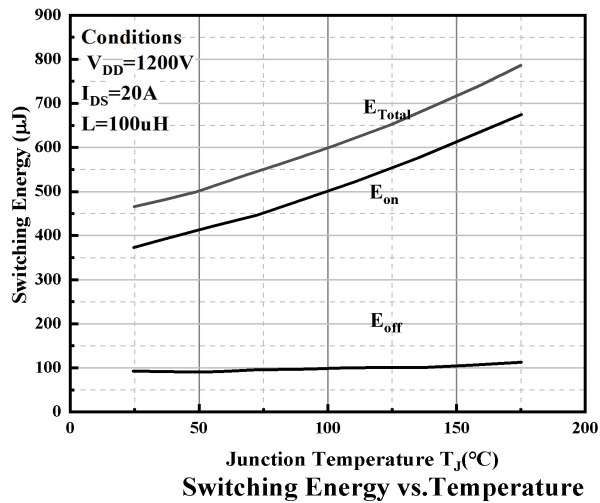
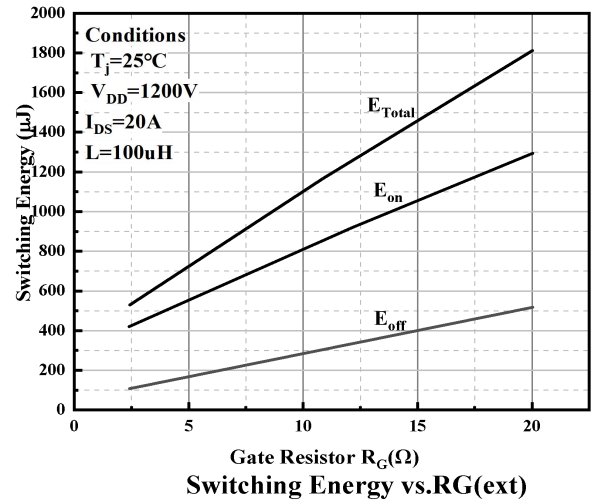
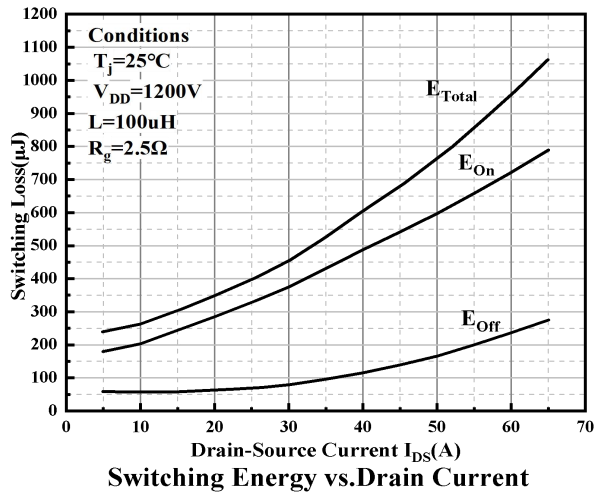
Electrical characteristics (Ta=25°C, unless otherwise noted)

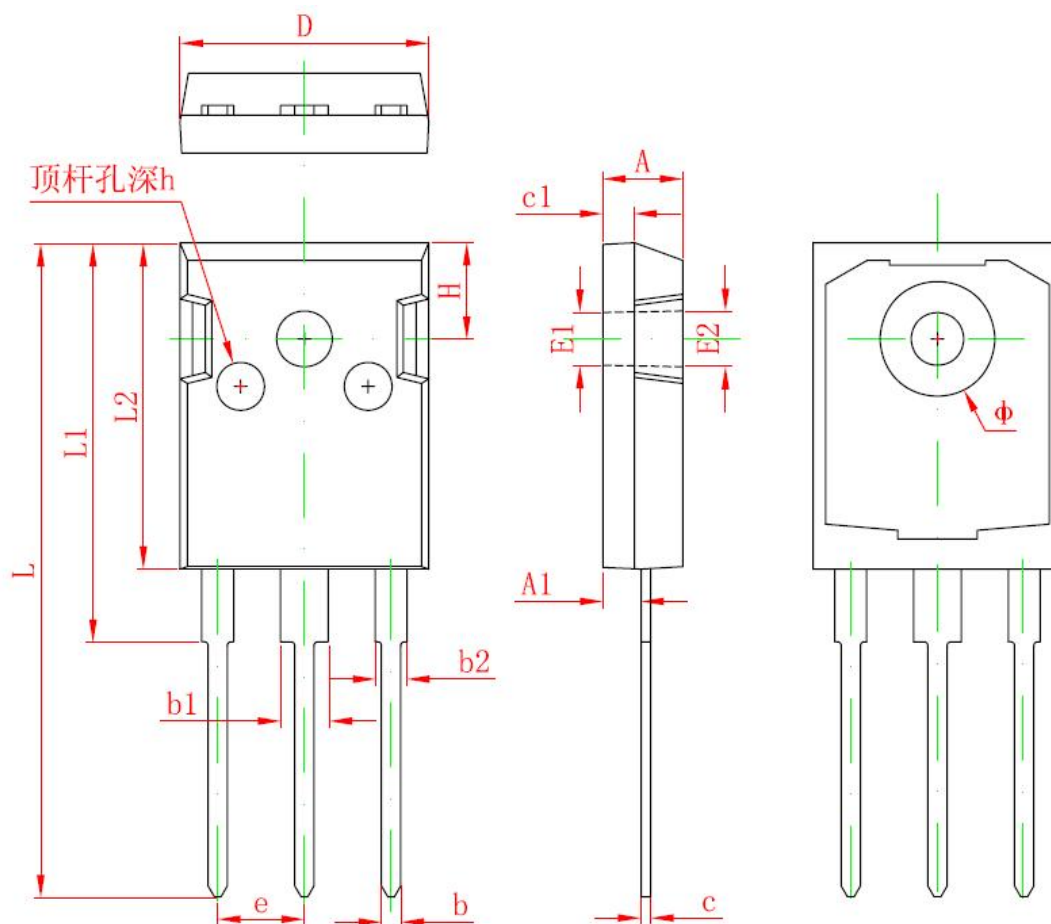
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , ID=100uA	1200	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =1200V, V _{GS} =0V, T _J =25℃	-	-	100	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =20V , V _{DS} =0V, T _J =25℃	-	-	250	nA
		V _{GS} =-10V , V _{DS} =0V, T _J =25℃	-	-	250	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =10mA, T _J =25℃	2.0	3.0	4.0	V
		V _{GS} =V _{DS} , I _D =10mA, T _J =175℃	-	2.6	-	
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =18V , I _D =20A, T _J =25℃	-	45	52	mΩ
		V _{GS} =18V , I _D =20A, T _J =175℃	-	81	-	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =1000V , V _{GS} =0V , f=100KHz , V _{AC} =25mV	-	2565	-	pF
Output Capacitance	C _{oss}		-	109	-	
Reverse Transfer Capacitance	C _{rss}		-	4	-	
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =800V , V _{GS} = -5/+20V , I _D =20A	-	124	-	nC
Gate-Source Charge	Q _{gs}		-	32	-	
Gate-Drain Charge	Q _{gd}		-	33	-	
Turn-On Delay Time	T _{d(on)}	V _{DS} =800V , V _{GS} = -5/+20V , I _D =20A R _G =2.5Ω, L=100uH	-	15	-	ns
Rise Time	T _r		-	19	-	
Turn-Off Delay Time	T _{d(off)}		-	25	-	
Fall Time	T _f		-	10	-	
Turn-On Energy	E _{on}		-	611	-	μJ
Turn-Off Energy	E _{off}		-	103	-	
Total Switching Loss	E _{tot}		-	714	-	
Reverse Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V , I _{SD} =20A , T _J =25℃	-	4.2	6.0	V
		V _{GS} = 0V , I _{SD} =20A , T _J =175℃	-	3.5	6.0	
Reverse Recovery Time	t _{rr}	V _{GS} =-5V, I _{SD} =20A, V _R =800V, di/dt=3500A/μs	-	50	-	ns
Reverse Recovery Charge	Q _{rr}		-	712	-	nC
Peak Reverse Recovery Current	I _{rrm}		-	19	-	A
Maximum Body-Diode Continuous Current	I _S	V _{GS} = -4V , T _J =25℃	-	55	-	A

Typical Characteristics







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