Features

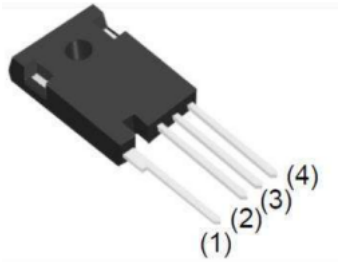
- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low RDS(on)
- Optimized package with separate driver source pin
- Easy to parallel and simple to drive

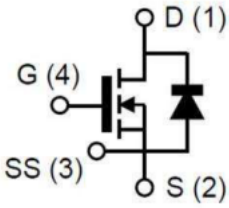
Product Summary

V_{DS}	1200	V
$R_{DS(on),Max}$@ V_{GS}=20V	52	mΩ
ID	60	A

Applications

- EV motor drive
- High Voltage DC/DC Converters
- Switch Mode Power Supplies
- Solar inverters
- EV charging





Absolute Maximum Ratings(Tc=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	1200	V
I_D	Drain Current(continuous)at Tc=25℃	60	A
I_D	Drain Current(continuous)at Tc=100℃	48	A
I_{DM}	Drain Current (pulsed)	100	A
V_{GS}	Gate-Source Voltage	-10/+22	V
P_D	Power Dissipation T_C = 25°C	325	W
T_J, Tstg	Junction and Storage Temperature Range	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Value.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.38	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	40	°C/W

The values are based on the junction-to case thermal impedance which is measured with the device mounted to a large heat sink assuming maximum junction temperature of Tj(max)=150℃

Electrical Characteristics(T_J = 25℃ unless otherwise specified)

Typical Performance-Static

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-source Breakdown Voltage	I_D=250uA,V_{GS}=0V	1200			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =1200V, V_{GS} =0V, T_J=25°C			100	uA
I_{GSS}	Gate-body Leakage Current	V_{DS} =0V ; V_{GS} =-10 to 20V			250	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=10mA	2		4	V
V_{GSon}	Recommended turn-on Voltage	Static		20		V
V_{GSoff}	Recommended turn-off Voltage			-5		V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS}=20V, I_D=20A			52	mΩ
		V_{GS}=20V, I_D=20A T_J=150℃		72		mΩ

Typical Performance-Dynamic

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	V_{DS}=1000V,f=100kHz, V_{AC}=25mV		3239		pF
C_{oss}	Output Capacitance			112		pF
C_{rss}	Reverse Transfer Capacitance			6		pF
g_{fs}	Transconductance	V_{DS}=20V , I_D=20A		23		S
E_{OSS}	C_{OSS} Stored Energy	V_{DS}=1000V,f=100kHz		63		μJ
E_{ON}	Turn-On Energy（Body Diode）	V_{DS}=800V,V_{GS}=-5/20V, I_D=20A，L=100uH T_J=150℃		611		μJ
E_{OFF}	Turn-Off Energy（Body Diode）			103		μJ
Q_g	Total Gate Charge	V_{DS}=800V, V_{GS}=-5V/20V, I_D = 20A		125		nC
Q_{gs}	Gate-source Charge			32		nC
Q_{gd}	Gate-Drain Charge			33		nC
$R_{G(int)}$	Internal Gate Resistance	f=1MHz,V_{AC}=25mV		3.5		Ω
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=800V,V_{GS}=-5V/20V, I_D =20A, L=100 μH Rext=2.5Ω		15		ns
t_r	Rise Time			19		ns
$t_{d(off)}$	Turn-off Delay Time			25		ns
t_f	Fall Time			10		ns

Typical Performance-Reverse Diode(T_J = 25℃ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{FSD}	Forward Voltage	V_{GS}=0V,I_F=20A,T_J=25°C		5	6	V
		V_{GS}=0V,I_F=20A,T_J=150°C		4.5	6	V
Is	Continuous Diode Forward Current	V_{GS}=0V，T_C=25°C		55		A
t_{rr}	Reverse Recovery Time	V_{GS}=-5 V, I_F=20 A, V_R=800 V, di/dt=900 A/μs，T_J=150°C		50		nS
Q_{rr}	Reverse Recovery Charge			712		nC
I_{rrm}	Peak Reverse Recovery Current			19		A

Electrical Characteristics

Fig1. Output characteristics (T_J = 25 °C)

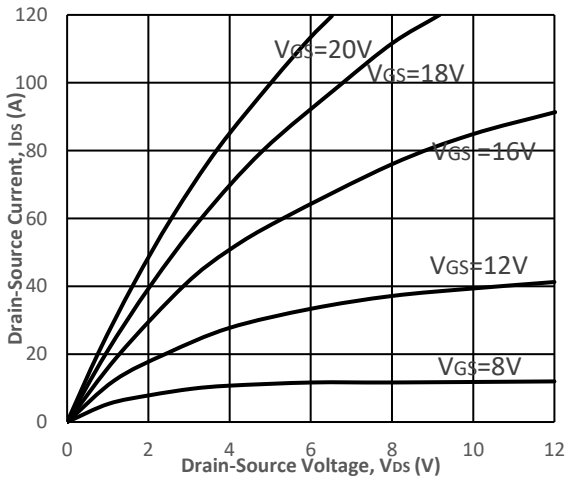


Fig2. Output characteristics (T_J = 150 °C)

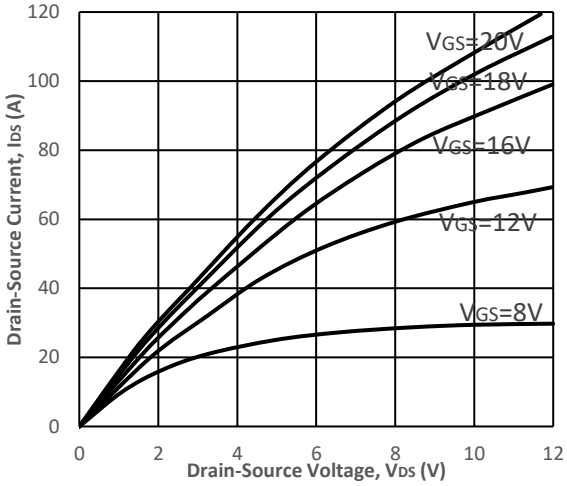


Fig3.Normalized On-Resistance vs. Temperature

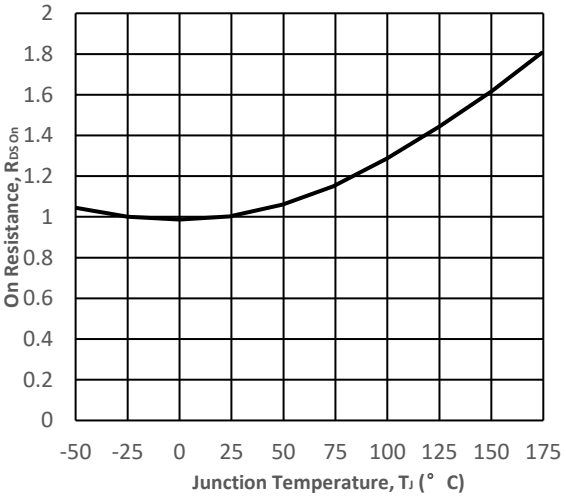


Fig4. On-Resistance vs. Temperature

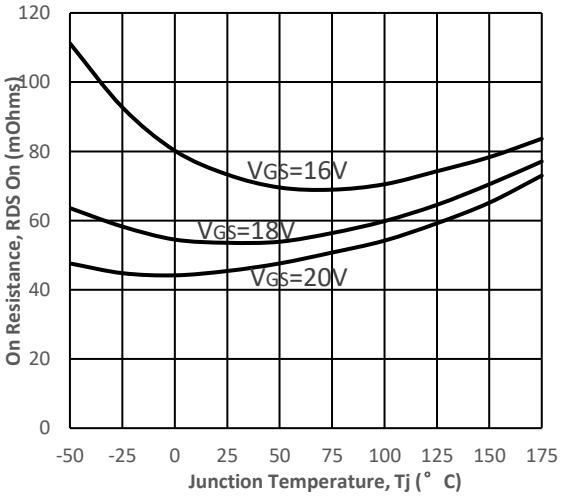


Fig5. Transfer Characteristic

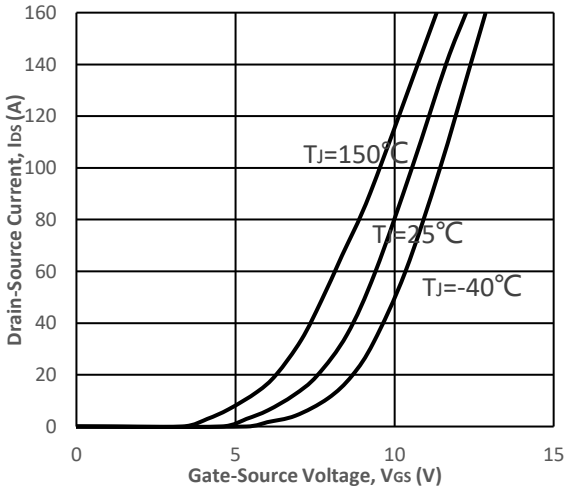


Fig6. Body Diode Characteristic at 25 °C

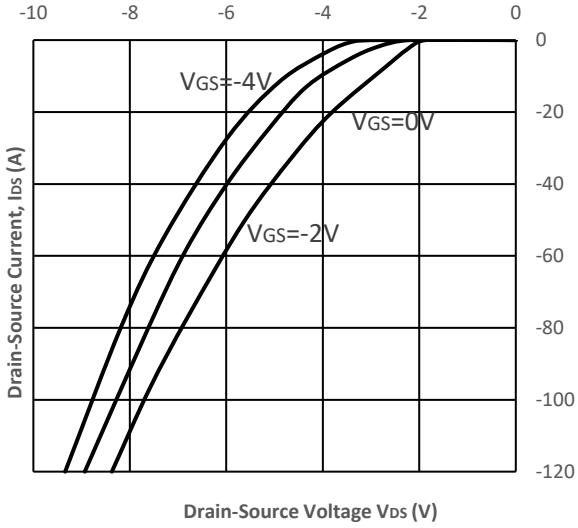


Fig7.Threshold Voltage vs. Temperature

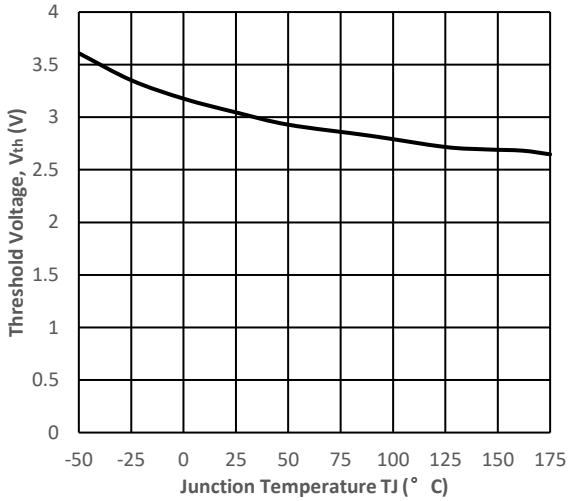


Fig8. Gate Charge Characteristics

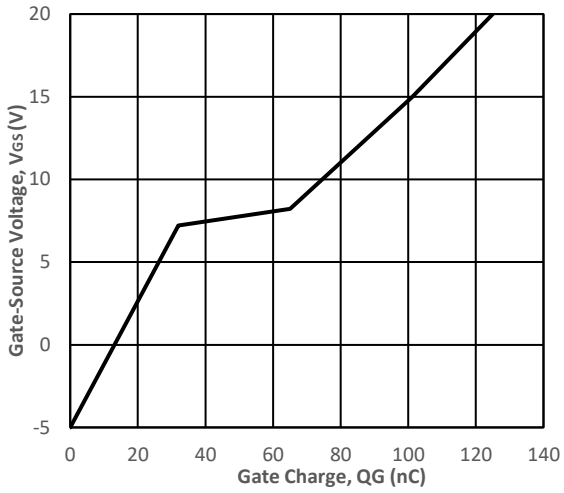


Fig9. 3rd Quadrant Characteristic at 25 °C

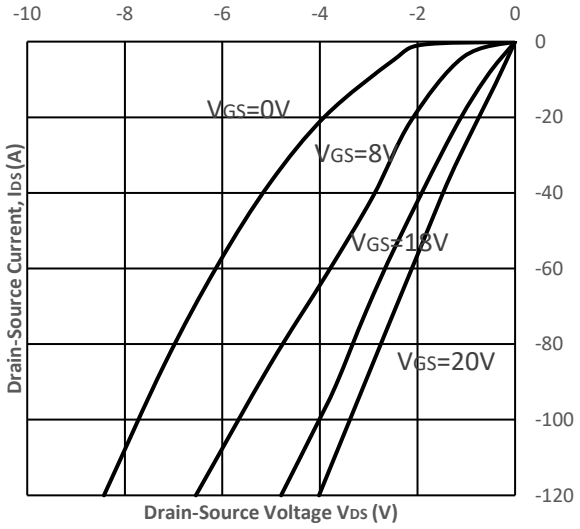


Fig10. Output Capacitor Stored Energy

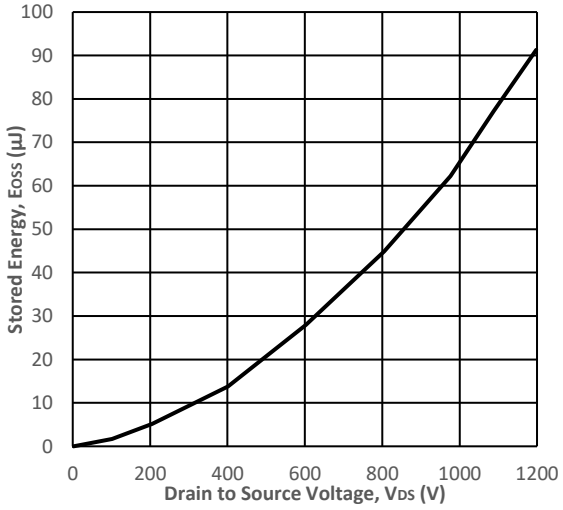


Fig11. Capacitances vs. Drain-Source

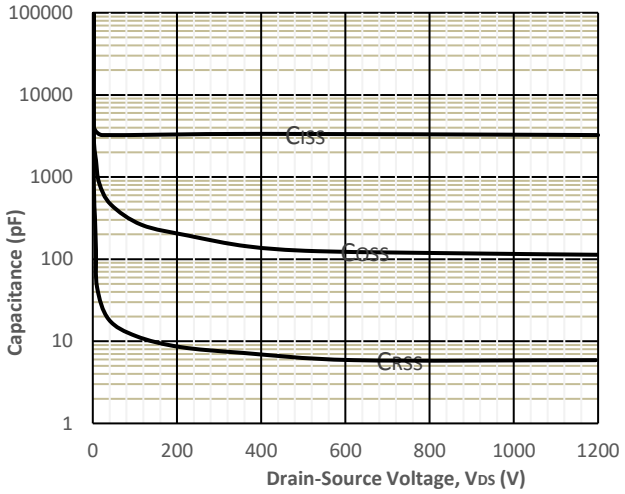


Fig12. Max Power Dissipation Derating Vs Tc

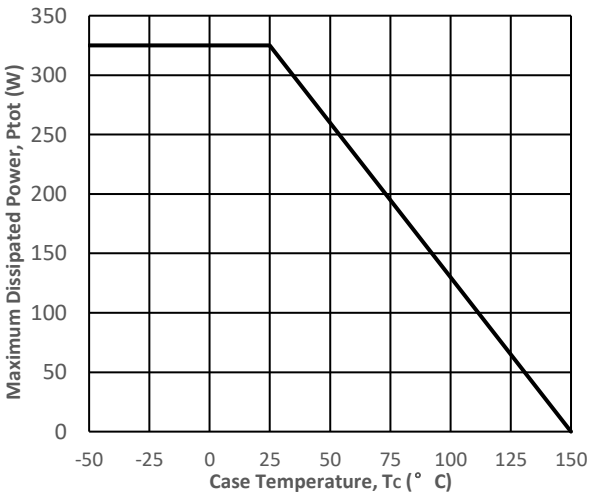


Fig13. Switching Energy vs. Drain Current

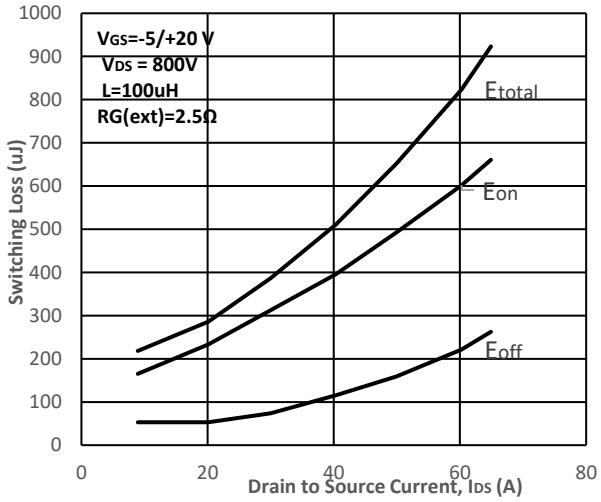


Fig14. Switching Energy vs. RG(ext)

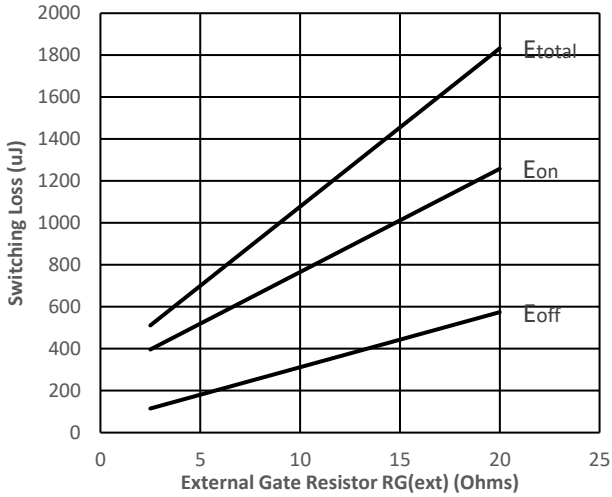


Fig15. Switching Energy vs. Temperature

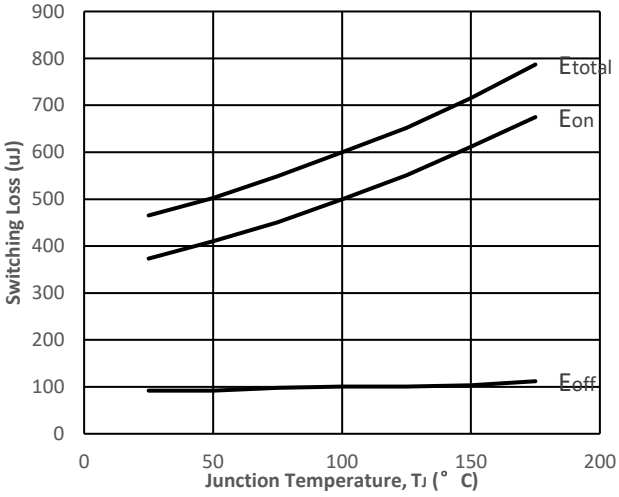


Fig16. Switching Times vs. RG(ext)

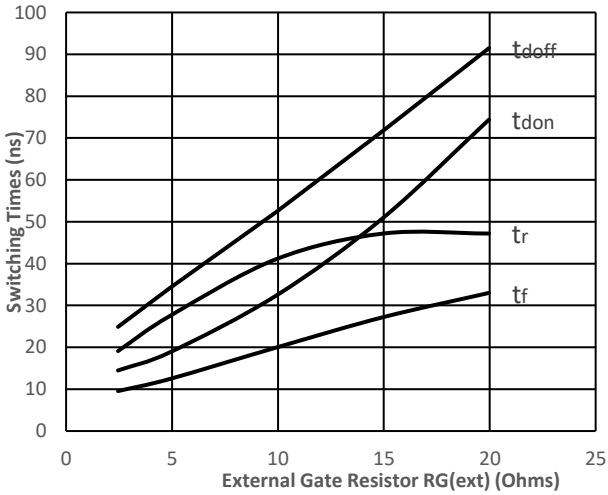


Fig17.Transient Thermal Impedance

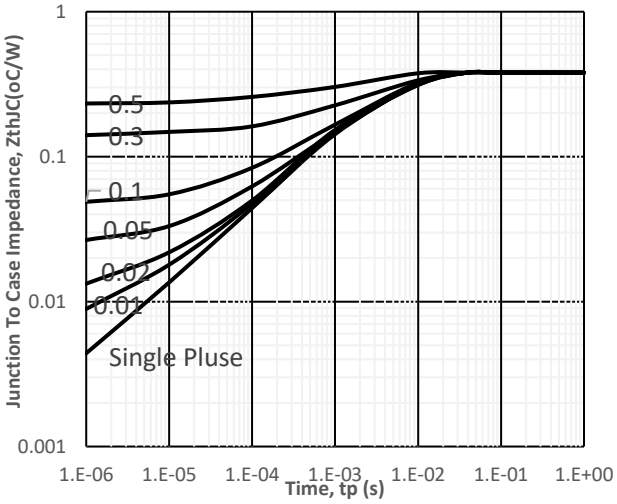
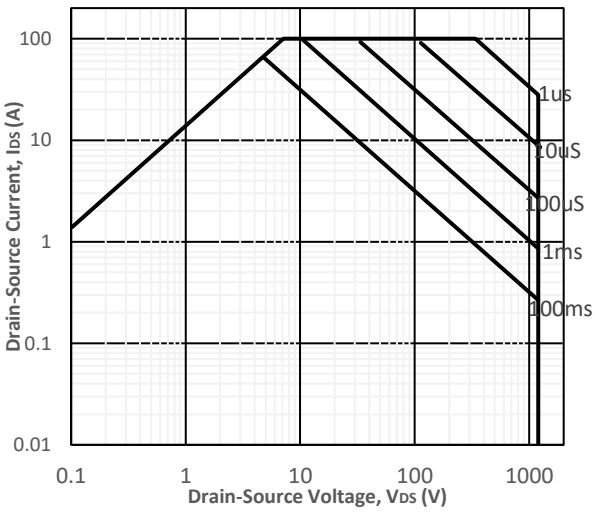
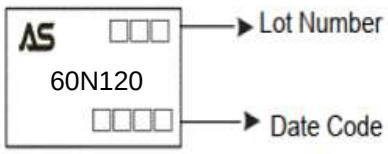


Fig18. Safe Operating Area



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASCM60N120XD-T	60N120	TO-247-4	Tube	30/Tube

PACKAGE	MARKING
TO-247-4	

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