V_{DSS}	800 V
I_D	17.6 A
$R_{DS(ON)}$	190 mΩ

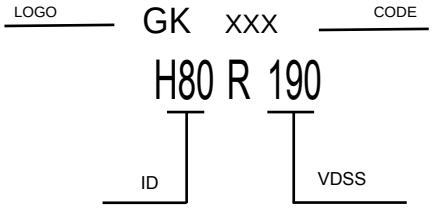
FEATURES

Wide Bandgap SiC MOSFET Technology
Low On-Resistance with High Blocking Voltage
Low Capacitances with High-Speed Switching
Low Reverse Recovery (Qrr)
Robust against Parasitic Turn on Even 0V Turn off Gate Voltage



BENEFITS

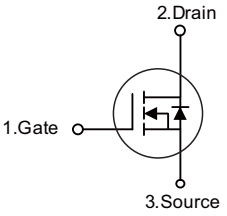
Reduced Switching Losses
Increased System Switching Frequency
Increased Power Density
Reduction of Heat Sink Requirements
Reduced EMI



APPLICATION

Switch Mode Power Supplies
High Voltage DC/DC Converters
Battery Chargers
Motor Drives
Pulsed Power Applications





ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Test Condition	Value	Unit
Drain to Source Voltage	V_{DS}	V_{GS} = 0V	800	V
Gate to Source Voltage	V_{GS}	Absolute maximum values	-10/+22	V
Recommended Operation Voltage of Gate to Source	V_{GSop}	Recommended operational values	0/+18	V
Continuous Drain Current	I_D	V_{GS}=18V, T_C=25℃	17.7	A
		V_{GS}=18V, T_C=100℃	12.5	
Pulsed Drain Current	I_{DM}	V_{GS}=18V, T_C=25℃	36.2	A
Power Dissipation	P_{tot}	T_C=25℃, T_j=175℃	78.9	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to +175	℃

Electrical Characteristics (T_J=25℃unless otherwise noted)

Static Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=500μA	800			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}= V_{DS}, I_D=1.3mA	2.6		4.6	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=800V, T_j=25℃			100	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=18V, V_{DS}=0V			250	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=15V, I_D=6.5A		245		mΩ
		V_{GS}=15V, I_D=6.5A, T_j=175℃		201		
		V_{GS}=18V, I_D=6.5A		190	247	
		V_{GS}=18V, I_D=6.5A, T_j=175℃		185		

Dynamic Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=400V, f=100KHz, T_j=25℃		376		pF
Output Capacitance	C_{oss}			30.2		
Reverse Transfer Capacitance	C_{rss}			3.0		
Total Gate Charge	Q_g	V_{GS}=0/18V, V_{DS}=400V, I_D=6.5A, T_j=25℃		24.5		nC
Gate-Source Charge	Q_{gs}			9.9		
Gate-Drain Charge	Q_{gd}			6.5		
Gate Resistance	R_g	f=1MHz		3.6		Ω

Thermal Characteristics

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Thermal Resistance from Junction to Case	$R_{th(j-c)}$	-	1.9	-	℃/W

Electrical Characteristics (T_J=25℃unless otherwise noted)

Switching Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=0/18V， V_{DD}=400V, I_D=6.5A, R_g=5Ω, L=200uH		13.2		ns
Rise Time	t_r			35.2		
Turn-Off Delay Time	$t_{d(off)}$			18.8		
Fall Time	t_f			36.8		

Reverse Diode Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}=3.5A, T_j=25℃	-	3.4		V
Continuous Diode Forward Current	I_S	V_{GS}=0V， T_j=25℃		17.6		A
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_{SD}=6.5A, V_R=400V, di/dt=880A/us, T_j=25℃		11.8		ns
Reverse Recovery Charge	Q_{rr}			34.5		nC
Peak Reverse Recovery Current	I_{rrm}			4.6		A

RATING AND CHARACTERISTIC CURVES

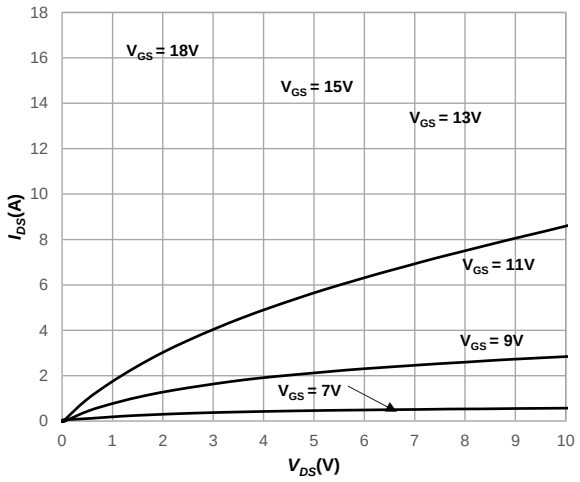


Fig1. Output Characteristics T_j=25℃

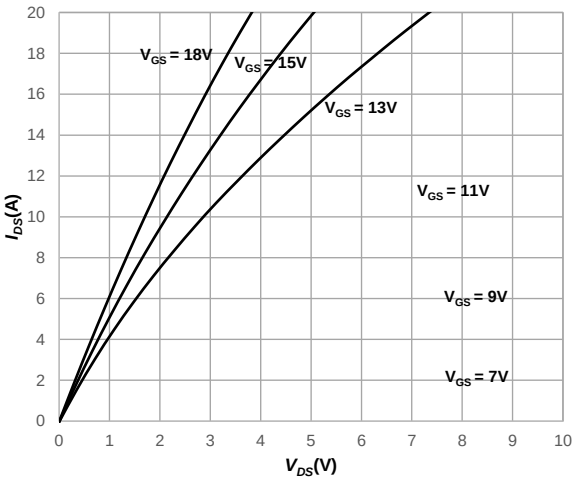


Fig2. Output Characteristics T_j=175℃

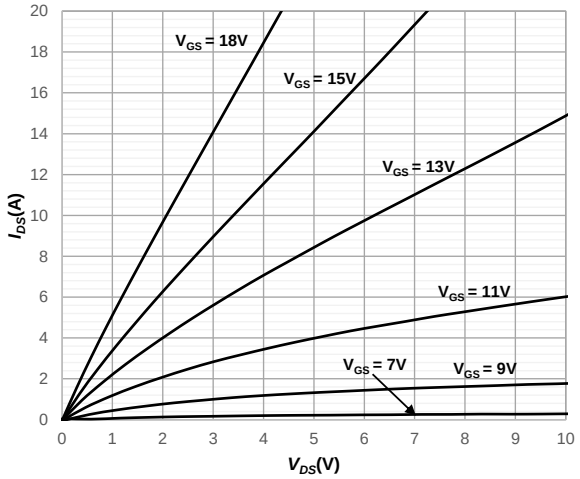


Fig3. Output Characteristics T_j= -40℃

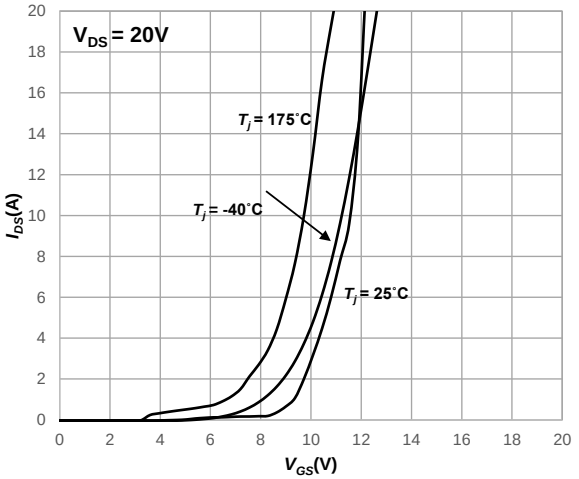


Fig4. Typical Transfer Characteristics

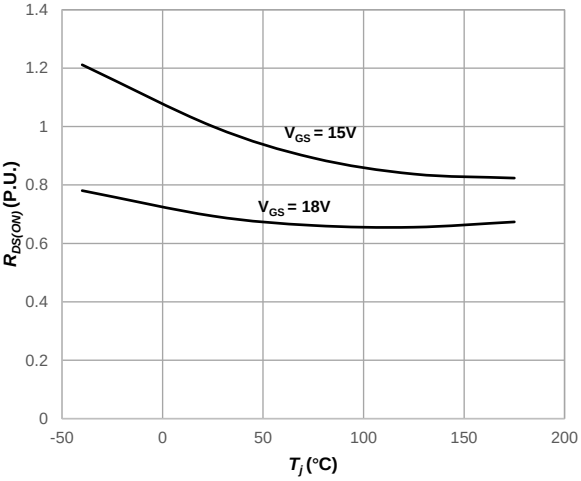


Fig5. Normalized On-Resistance vs. Temperature

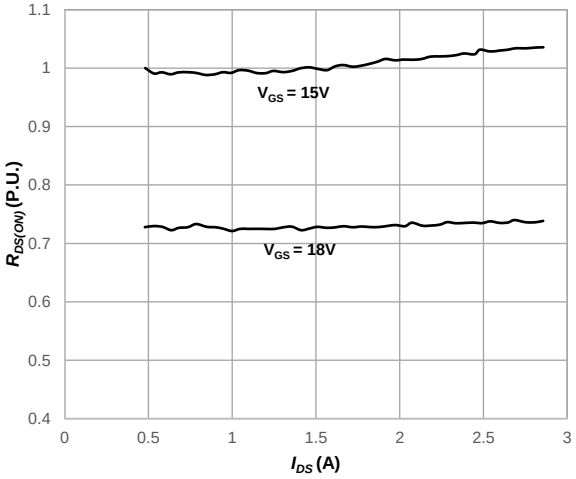


Fig6. Normalized On-Resistance vs. Drain Current For T_j=25℃

RATING AND CHARACTERISTIC CURVES

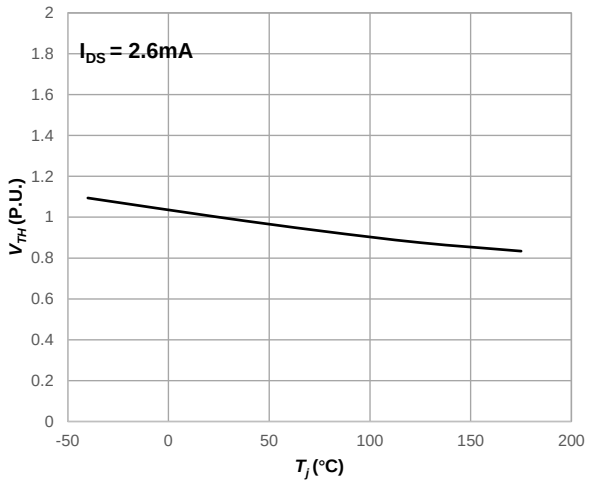


Fig7. Normalized Threshold Voltage vs. Temperature

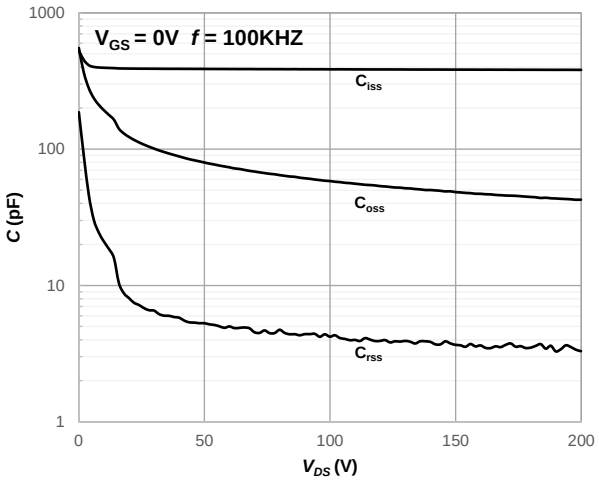


Fig8. Capacitances vs. Drain-Source Voltage (0-200V)

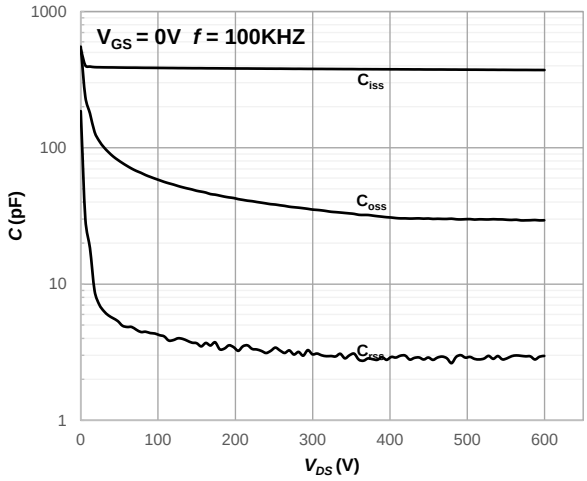


Fig9. Capacitances vs. Drain-Source Voltage (0-650V)

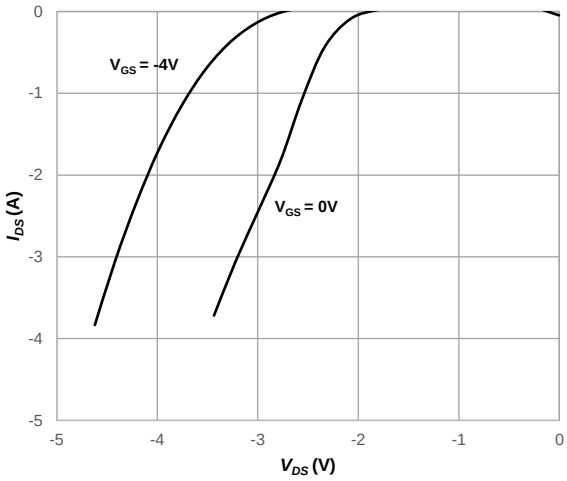


Fig10. Body Diode Characteristics

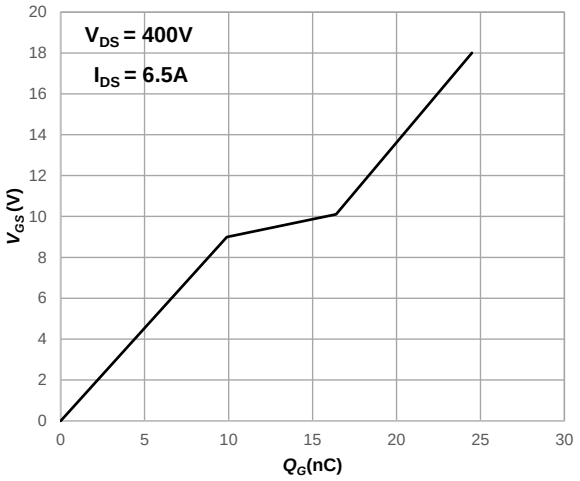


Fig11. Gate Charge Characteristic

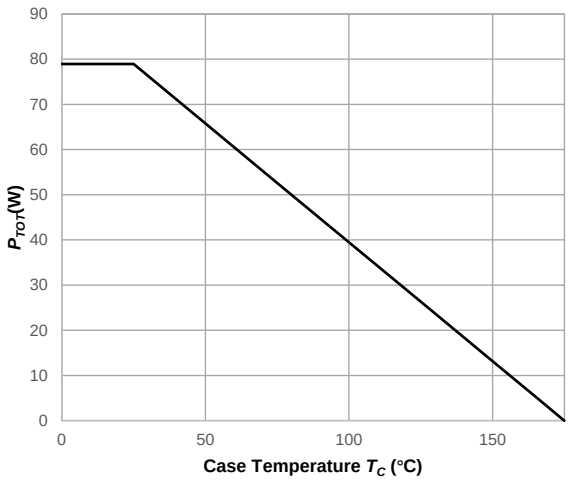


Fig12. Power Dissipation vs. Case temperature

RATING AND CHARACTERISTIC CURVES

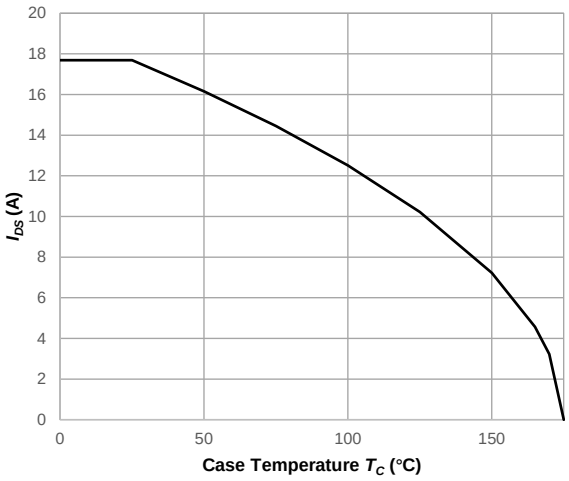
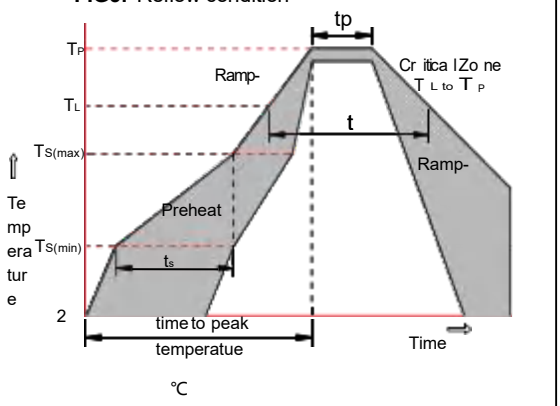


Fig13. Continuous Drain Current vs. Case Temperature

Soldering parameters

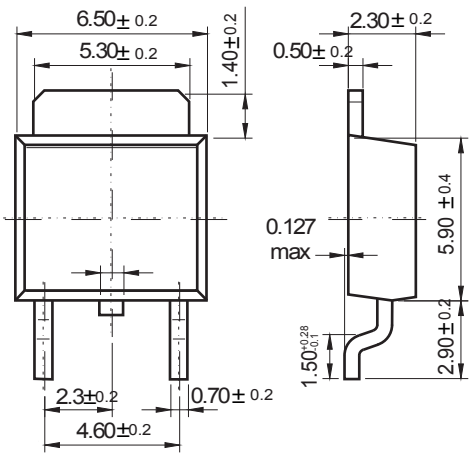
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition

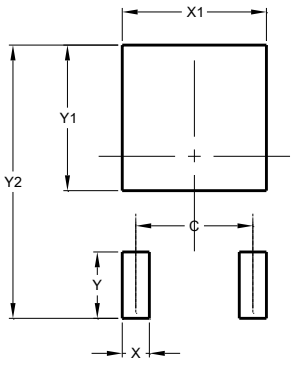


Package Dimensions & Suggested Pad Layout

TO-252



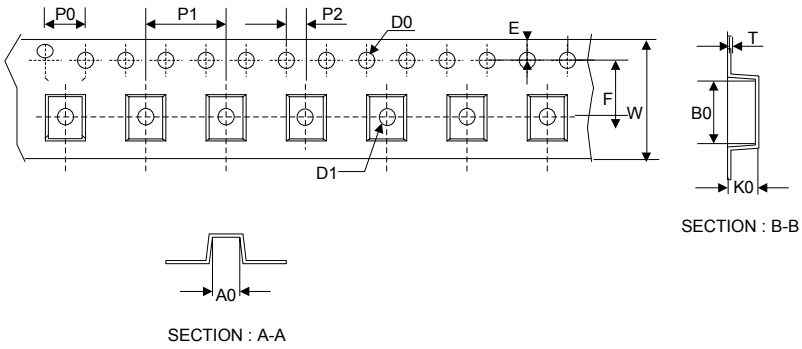
Dimensions in inches and (millimeters)



Dimensions	Value (in mm)
C	4.55
X	1.50
X1	5.80
Y	2.70
Y1	6.00
Y2	10.90

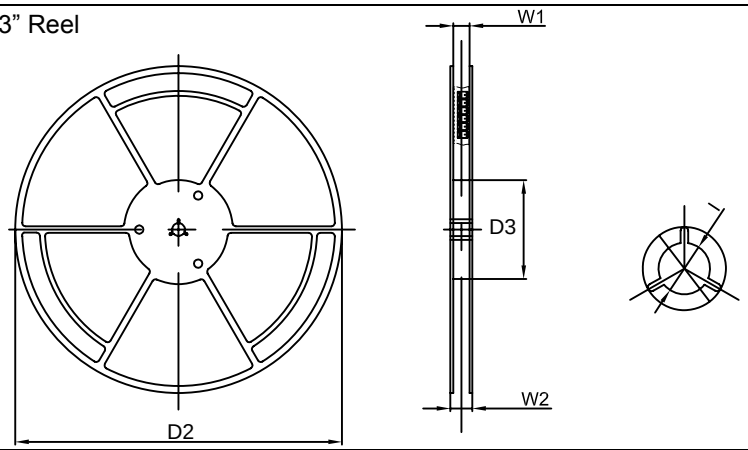
Tape & rell specification

Tape



Symbol	Dimension (mm)
P0	4.00±0.20
P1	8.00±0.20
P2	2.00±0.20
D0	1.55±0.15
D1	1.55±0.20
E	1.75±0.20
F	7.50±0.20
W	16.00±0.20
A0	7.10±0.20
B0	10.50±0.20
K0	2.70±0.20
T	0.30±0.10

13” Reel



D2	330.0±5.0
D3	100.0±4.0
W1	20.0±5.0
W2	25.0±5.0
I	13.0±2.0

Quantity: 2500PCS