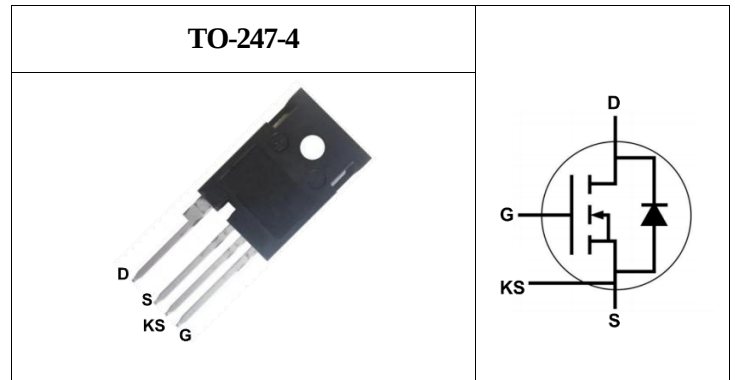


Key Performance Parameters		
Parameter	Value	Unit
V_{DS}	1200	V
$R_{DS(ON)max}$, $V_{GS}=18V$	55	$m\Omega$
$R_{DS(ON)typ}$, $V_{GS}=18V$	36	$m\Omega$
I_D	82	A
Q_G	122	nC



Please note Driver Source and Power Source are not exchangeable. Their exchange might lead to malfunction.

Features	Application
• High Blocking Voltage with Low On-Resistance • High-Speed Switching with Low Capacitances • Easy to Parallel and Simple to Drive • Avalanche Ruggedness • Halogen Free; RoHS Compliant	• Solar Inverters • Switch Mode Power Supplies • High Voltage DC/DC Converters • Battery Chargers • Motor Drivers • Pulsed Power applications

Absolute Maximum Ratings ($T_c=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	1200	V
Gate-Source Voltage		V_{GS}	-10/+22	V
Drain Current-Continuous ^{Note3}	$V_{GS}=18V, T_C=25^{\circ}C$	I_D	82	A
	$V_{GS}=18V, T_C=100^{\circ}C$		56	A
Drain Current-Pulsed ^{Note1}	$T_C=25^{\circ}C$	I_{DM}	160	A
Power Dissipation	$T_C=25^{\circ}C, T_C=175^{\circ}C$	P_{tot}	268	W
Operating Junction and Storage Temperature		T_J, T_{SJ}	-55 to 175	$^{\circ}C$

Thermal Resistance Ratings

Parameter	Conditions	Min.	Typ.	Max.	Unit
Thermal resistance, Junction-to-Case	Steady State			0.56	$^\circ\text{C/W}$
Thermal resistance, Junction-to-Ambient ^{Note2}	Steady State			40	$^\circ\text{C/W}$

Notes:

1. Pulse Test Pulse Width $\leq 10\text{ms}$, Duty Cycle $\leq 1\%$.
2. For surface-mounted devices, both R_{thJC} and R_{thJA} are measured with the device mounted on approximately 1"×1"FR-4 PCBs. In actual applications, many factors including the PCB material and layout, may affect the thermal resistance of the device-board assembly. For best results, characterize the thermal resistance directly in the application circuit.
3. The maximum current rating is package limited.

Electrical Characteristics (T_J=25°C unless otherwise noted)

STATIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 100\mu A$	1200			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 1200V, V_{GS} = 0V$		1	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = 18V, V_{DS} = 0V$			250	nA

STATIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 10mA, T_J = 25^\circ C$	2.0	2.8	4.0	V
		$V_{DS} = V_{GS}, I_D = 10mA, T_J = 175^\circ C$		2.1		V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 18V, I_D = 40A, T_J = 25^\circ C$		36	55	m Ω
		$V_{GS} = 18V, I_D = 40A, T_J = 175^\circ C$		54		m Ω
Transconductance	g_{fs}	$V_{DS} = 20V, I_D = 40A, T_J = 25^\circ C$		23		S
		$V_{DS} = 20V, I_D = 40A, T_J = 175^\circ C$		22		S
Gate Resistance	R_g	$f = 1MHz, V_{AC} = 25mV$		3.2		Ω

DYNAMIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	C_{iss}	$V_{DS} = 1000V, V_{GS} = 0V, f = 100KHz$		2656		pF
Output Capacitance	C_{oss}	$V_{DS} = 1000V, V_{GS} = 0V, f = 100KHz$		107		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 1000V, V_{GS} = 0V, f = 100KHz$		10		pF
Turn-On Delay Time	$T_{d(on)}$	$V_{DS} = 800V, V_{GS} = -4/+18V, I_D = 35A, R_G = 2.2\Omega, L = 100\mu H$		13		ns
Rise Time	t_r	$V_{DS} = 800V, V_{GS} = -4/+18V, I_D = 35A, R_G = 2.2\Omega, L = 100\mu H$		13		ns
Turn-Off Delay Time	$T_{d(off)}$	$V_{DS} = 800V, V_{GS} = -4/+18V, I_D = 35A, R_G = 2.2\Omega, L = 100\mu H$		21		ns
Fall Time	t_f	$V_{DS} = 800V, V_{GS} = -4/+18V, I_D = 35A, R_G = 2.2\Omega, L = 100\mu H$		7		ns
Turn-On Switching Energy	E_{ON}	$V_{DS} = 800V, V_{GS} = -4/+18V, I_D = 35A, R_G = 2.2\Omega, L = 100\mu H$		348		μJ
Turn-Off Switching Energy	E_{OFF}	$V_{DS} = 800V, V_{GS} = -4/+18V, I_D = 35A, R_G = 2.2\Omega, L = 100\mu H$		94		μJ

GATE CHARGE CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate to Source Charge	Q_{gs}	$V_{DS} = 800V, I_D = 40A, V_{GS} = -4/+18V$		35		nC
Gate to Drain Charge	Q_{gd}	$V_{DS} = 800V, I_D = 40A, V_{GS} = -4/+18V$		34		nC
Total Gate Charge	Q_G	$V_{DS} = 800V, I_D = 40A, V_{GS} = -4/+18V$		122		nC

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage	V_{SD}	$V_{GS} = -4V, I_F = 20A, T_J = 25^\circ C$		3.9		V
		$V_{GS} = -4V, I_F = 20A, T_J = 175^\circ C$		3.5		V
Continuous Diode Forward Current	I_S	$V_{GS} = -4V, T_C = 25^\circ C$			82	A
		$V_{GS} = -4V, T_C = 100^\circ C$			56	A
Body Diode Reverse Recovery Time	t_{rr}	$V_{GS} = -4V, V_R = 800V, I_F = 40A, di/dt = 5399A/\mu s$		13		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$V_{GS} = -4V, V_R = 800V, I_F = 40A, di/dt = 5399A/\mu s$		271		nC
Reverse Recovery Current	I_{RRM}	$V_{GS} = -4V, V_R = 800V, I_F = 40A, di/dt = 5399A/\mu s$		39		A

Typical Operating Characteristics

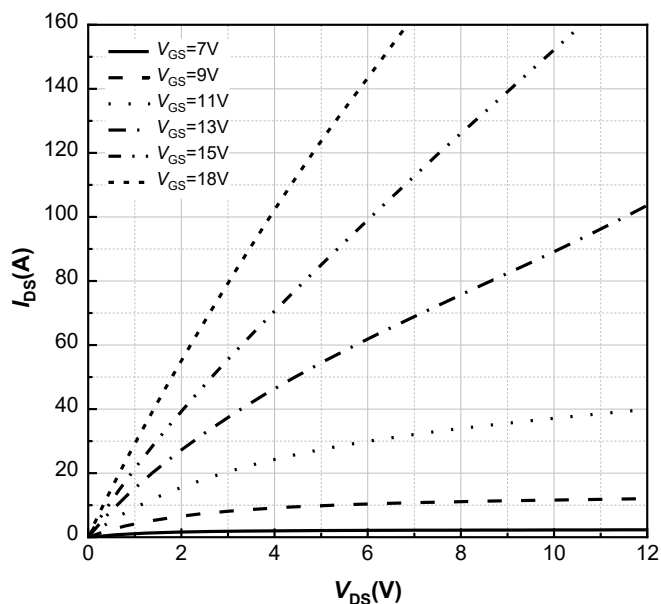


Figure 1. Output Characteristics
 $T_j = -40^\circ\text{C}$

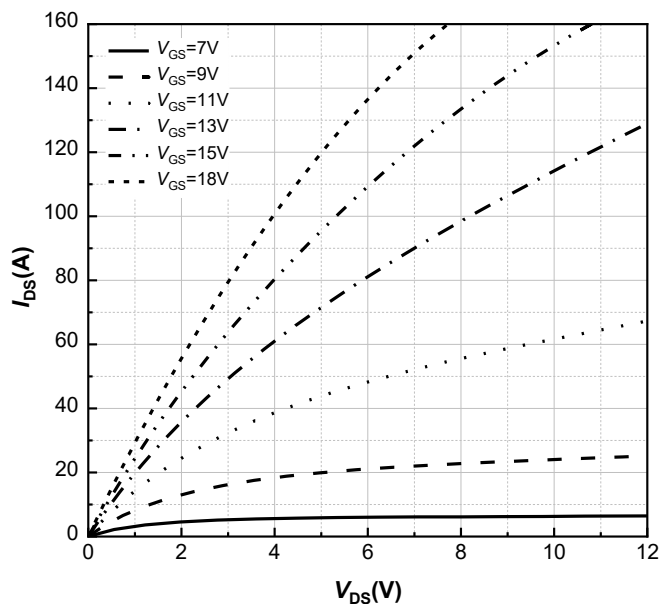


Figure 2. Output Characteristics
 $T_j = 25^\circ\text{C}$

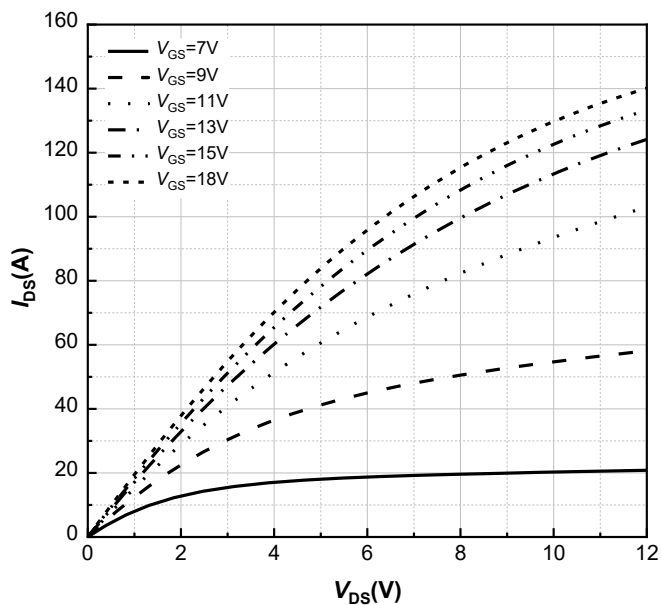


Figure 3. Output Characteristics
 $T_j = 175^\circ\text{C}$

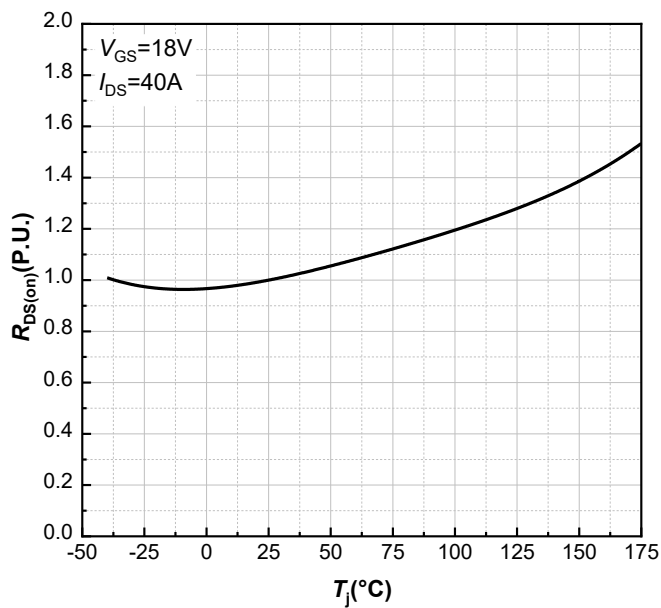


Figure 4. Normalized On-Resistance vs. Temperature

Typical Operating Characteristics

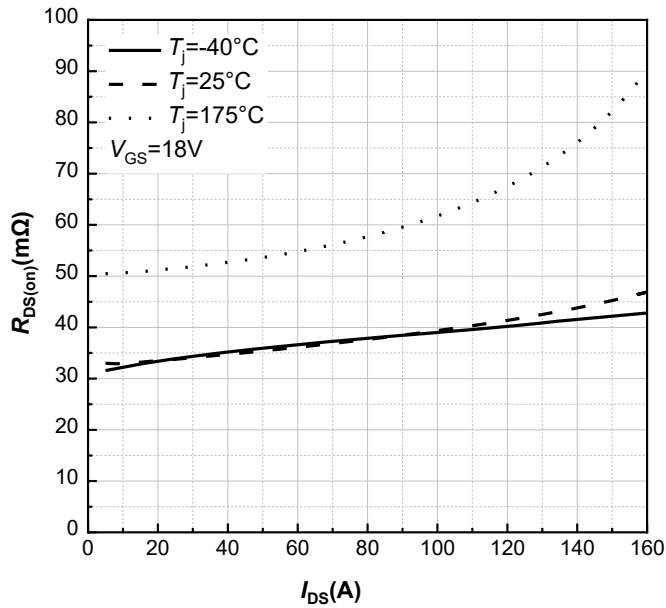


Figure 5. On-Resistance vs. Drain Current For Various Temperatures

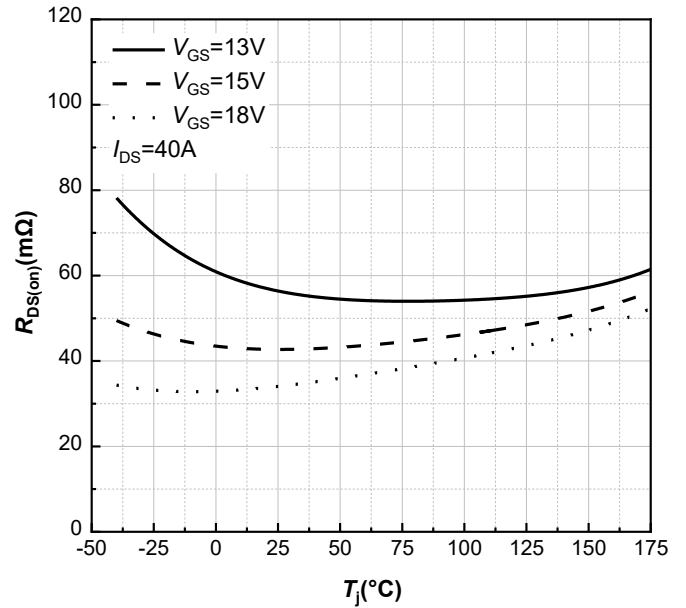


Figure 6. On-Resistance vs. Temperature For Various Gate Voltage

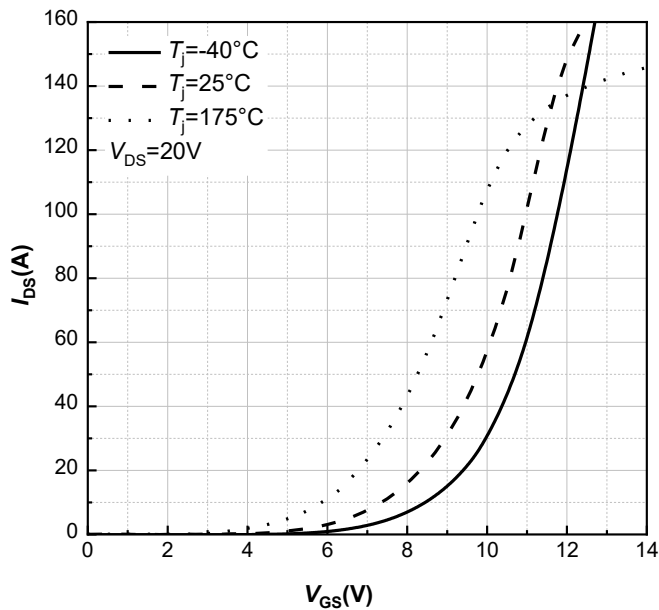


Figure 7. Transfer Characteristic For Various Junction Temperatures

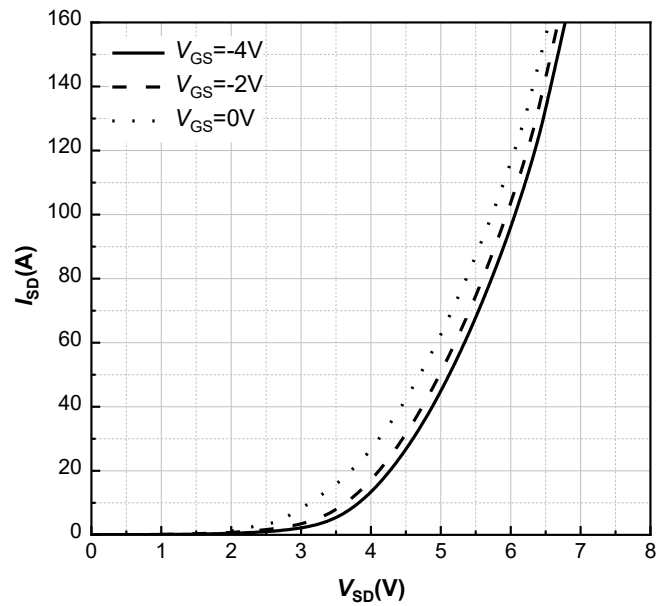


Figure 8. Body Diode Characteristic
 $T_J = -40^{\circ}\text{C}$

Typical Operating Characteristics

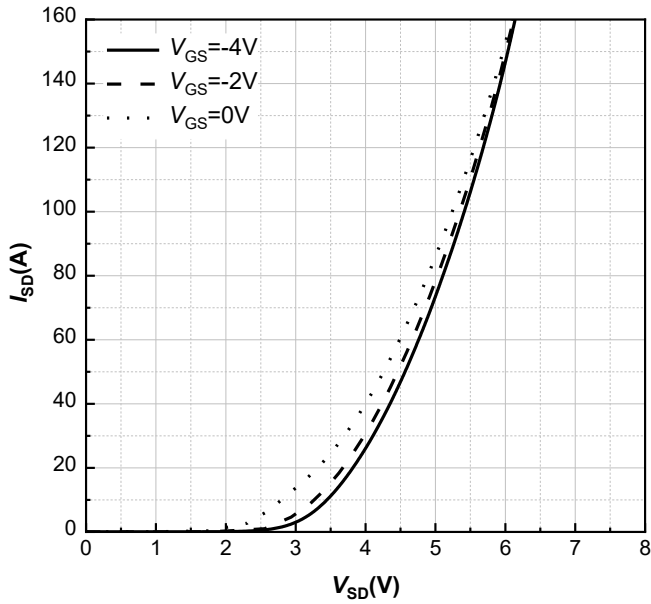


Figure 9. **Body Diode Characteristic**
 $T_j = 25^\circ\text{C}$

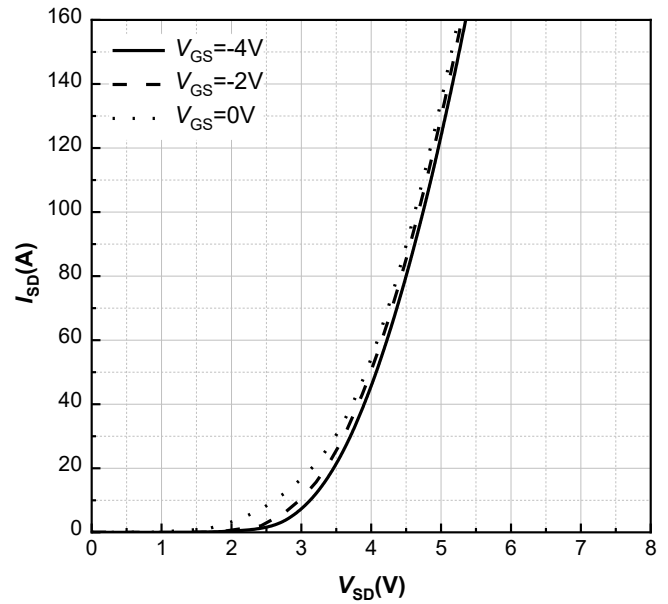


Figure 10. **Body Diode Characteristic**
 $T_j = 175^\circ\text{C}$

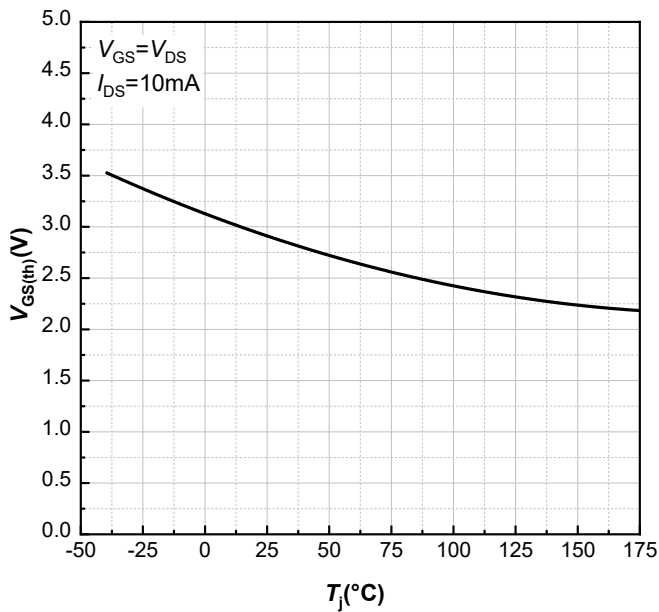


Figure 11. **Threshold Voltage vs. Temperature**

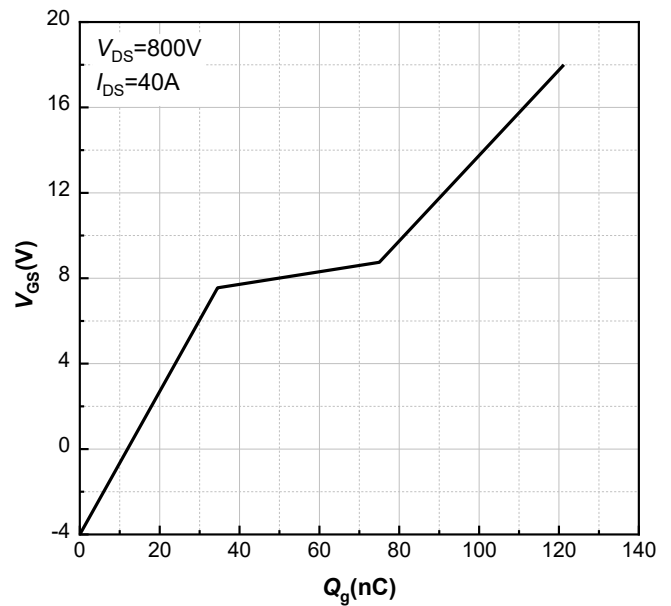


Figure 12. **Gate Charge Characteristics**

Typical Operating Characteristics

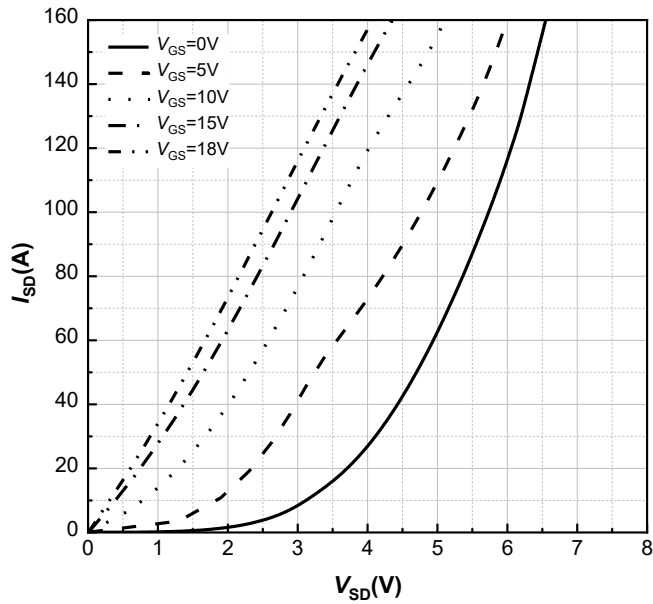


Figure 13. 3rd Quadrant Characteristic
 $T_j = -40^\circ\text{C}$

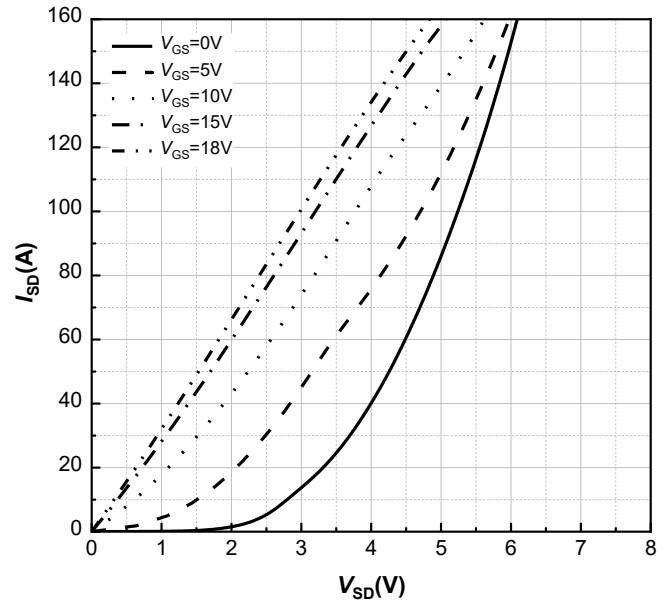


Figure 14. 3rd Quadrant Characteristic
 $T_j = 25^\circ\text{C}$

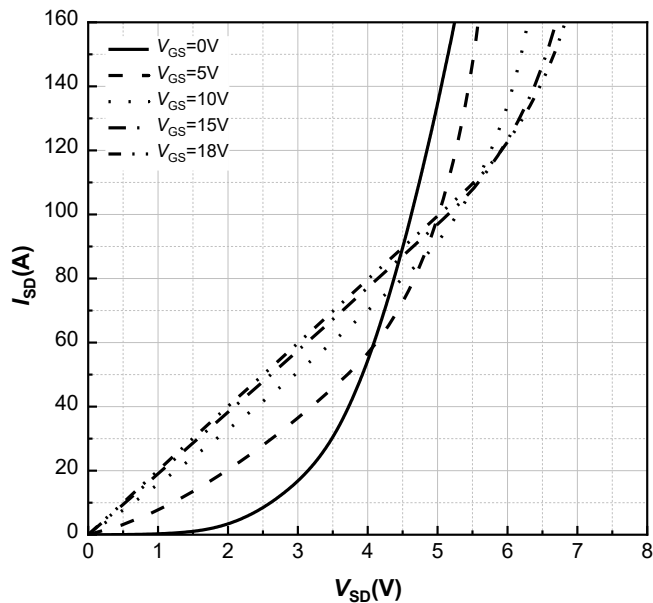


Figure 15. 3rd Quadrant Characteristic
 $T_j = 175^\circ\text{C}$

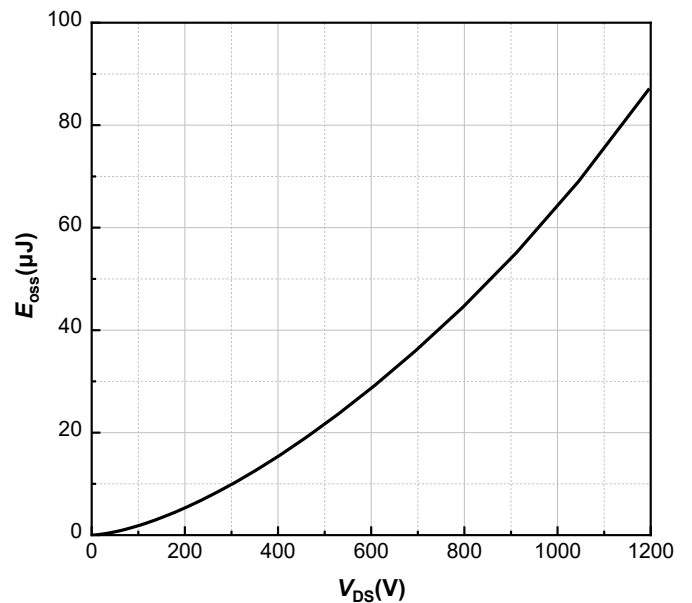


Figure 16. Output Capacitor Stored Energy

Typical Operating Characteristics

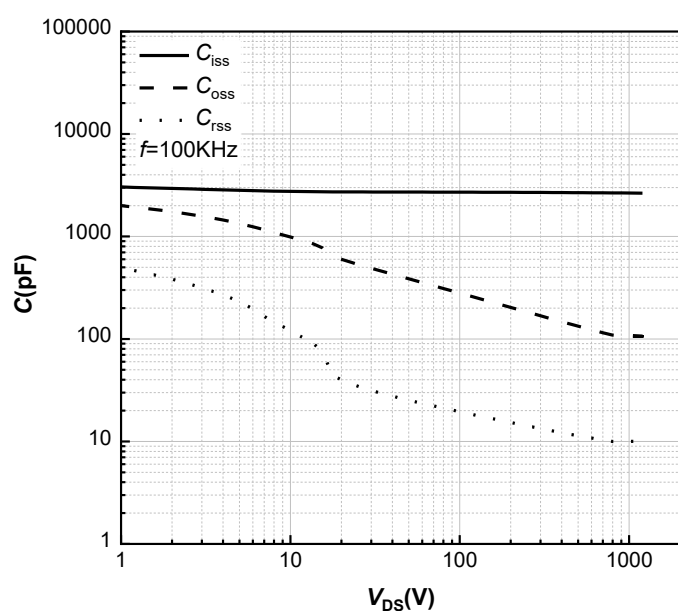
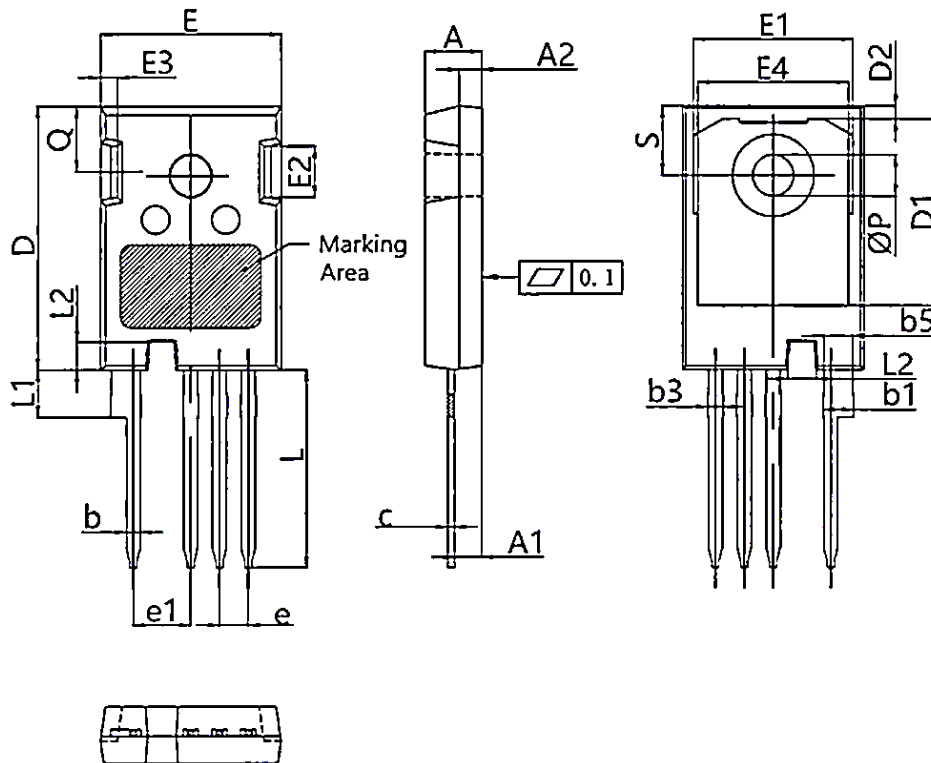


Figure 17. Capacitances vs. Drain-Source

Outline

TO-247-4



SYMBOL	MILLIMETER		
	MIN.	NOMINAL	MAX.
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
b	1.15	1.22	1.30
b1	2.40	2.68	2.90
b3	1.15	1.35	1.55
b5	2.40	2.53	2.65
c	0.55	0.62	0.70
D	23.30	23.45	23.60
D1	16.25	16.55	16.85
D2	1.02	1.17	1.32
E	15.75	15.94	16.13
E1	13.10	14.02	14.15
E2	3.70	4.40	5.10
E3	1.10	1.50	1.90
E4	13.06	13.26	13.43
e	2.44	2.54	2.64
e1	4.98	5.08	5.18
L	17.31	17.50	17.75
L1	3.97	4.17	4.37
L2	2.35	2.50	2.65
ØP	3.50	3.60	3.70
Q	5.60	5.80	6.00
S	6.05	6.15	6.25

NOTES:

1. All dimension are in millimeters, angles in degrees
2. Dimension D, E not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.127mm per end.