

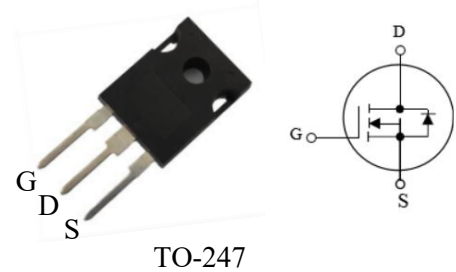


60R075E7D

MOSFET

•DESCRIPTION:

The 60R075E7D is an N-channel MOSFET designed to have better characteristics, such as Smart design in high voltage technology, Fast switching, Ultra low gate charge, Periodic avalanche rated, Extreme dv/dt rated, Low reverse recovery charge.



•ABSOLUTE MAXIMUM RATINGS

(TC = 25°C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V _{DS}	Drain-Source Voltage		600	V
V _{GS}	Gate-Source Voltage		±30	V
I _D	Continuous Drain Current	TC = 25°C	45	A
		TC = 100°C	29.5	
I _{DM}	Pulsed Drain Current		135	A
P _{tot}	Power Dissipation	TO-247	329	W
T _j	Junction Temperature		150	°C
T _{stg}	Operation and Storage Temperature		-55 to +150	°C
E _{AS}	Avalanche Energy		254	mJ

•ELECTRICAL CHARACTERISTICS

(TC = 25°C, unless otherwise specified)

Symbol	Parameter	Test Condition	Value			Unit
			Min	Type	Max	
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 1mA	600			V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =600V, V _{GS} =0V			1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±30V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	3.0		5.0	V
R _{DS(ON)}	Static Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 25A		67.5	76	mΩ

Symbol	Parameter	Test Condition	Value			Unit
			Min	Type	Max	
C _{iss}	Input Capacitance	V _G S=0V, V _D S=400V, f= 250KHz		3362		pF
C _{oss}	Output Capacitance			79		
C _{rss}	Reverse Transfer Capacitance			-		
Q _g	Total Gate Charge	V _D S= 400V V _G S= 10V I _D = 21.5A		80		nC
Q _{gs}	Gate-Source Charge			19		
Q _{gd}	Gate-Drain Charge			39		
T _{d(on)}	Turn-On Delay Time	V _D S=400V, V _G S= 10V I _D =21.5A, R _G =4.7Ω,		22		nS
T _r	Turn-On Rise Time			11		
T _{d(off)}	Turn-Off Delay Time			67		
T _f	Turn-Off Fall Time			8		
I _{SD}	Maximum Continuous Drain-Source Diode Forward Current				45	A
I _{SM}	Maximum Pulsed Drain-Source Diode, Forward Current				135	A
V _{SD}	Drain-Source Diode Forward Voltage	I _S =21.5A,V _G S=0V			1.4	V
t _{rr}	Reverse Recovery Time	V _{DD} =400V, I _f =21.5A di/dt=100A/uS		176		nS
Q _{rr}	Reverse Recovery Charge			1.54		uC

Note:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. I_{AS} =6.3A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. I_{SD} ≤21.5A, di/dt ≤100A/us, V_{DD}≤400, Starting T_J = 25°C
4. Pulse Test : Pulse width ≤300us, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

● THERMAL CHARACTERISTIC

Symbol	Parameter	Value		Unit
R _{thjc}	Thermal Resistance, Junction to Case	MAX	TO-247	°C /W
			0.38	

ELECTRICAL CHARACTERISTICS (CURVES)

60R075E7D

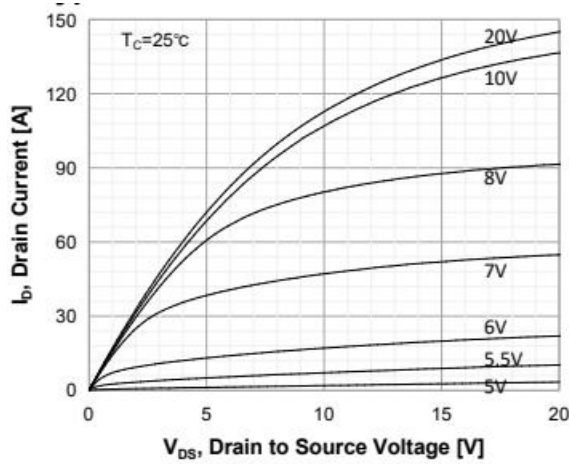


Figure 1. On-Region Characteristics

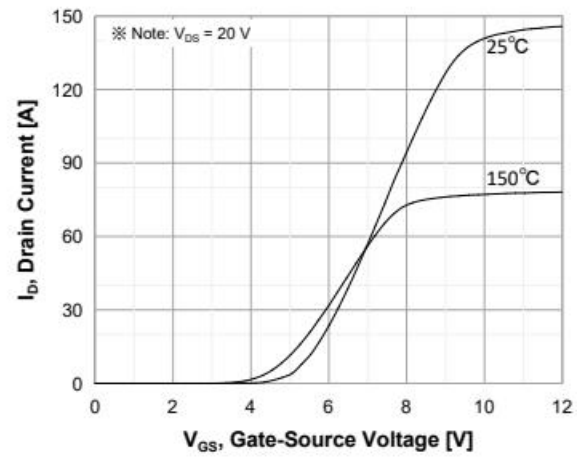


Figure 2. Transfer Characteristics

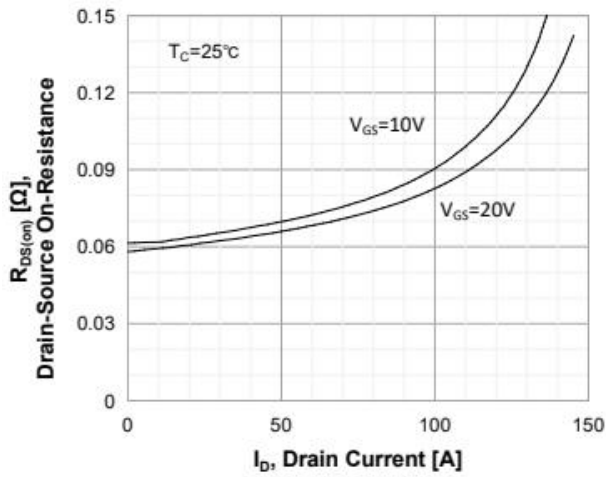


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

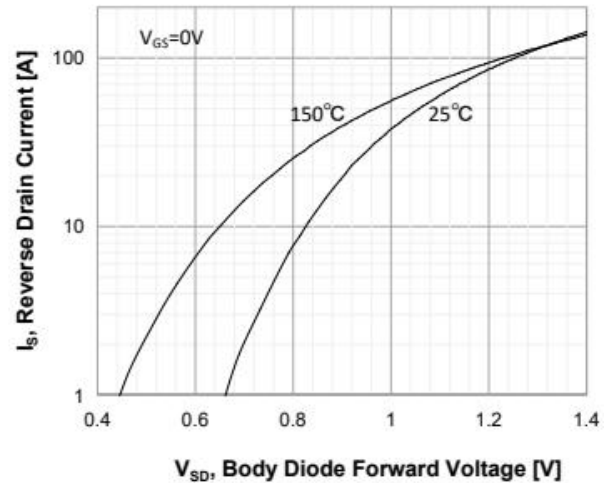


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

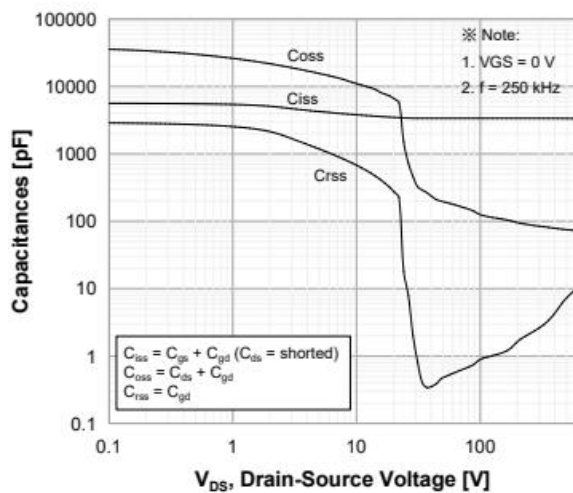


Figure 5. Capacitance Characteristics

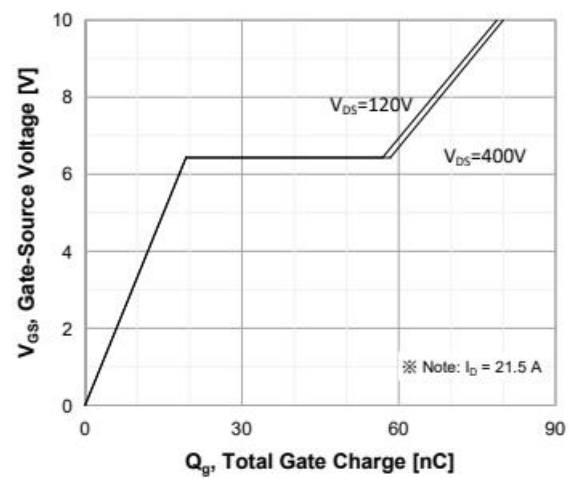


Figure 6. Gate Charge Characteristics

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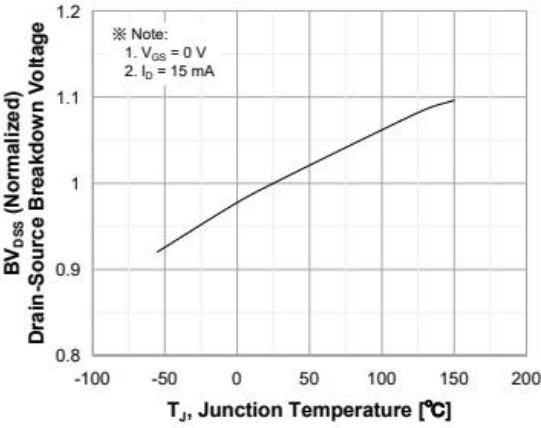


Figure 7. Breakdown Voltage Variation vs Temperature

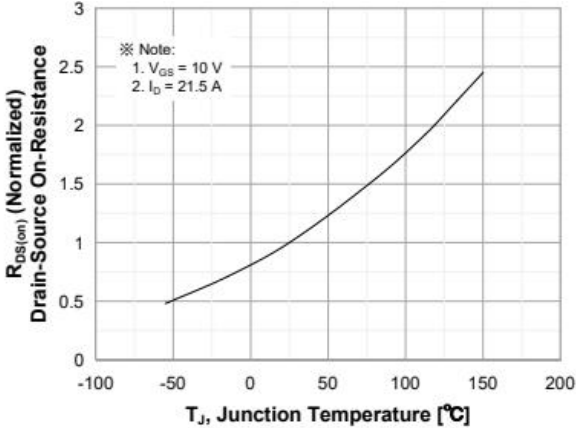


Figure 8. On-Resistance Variation vs Temperature

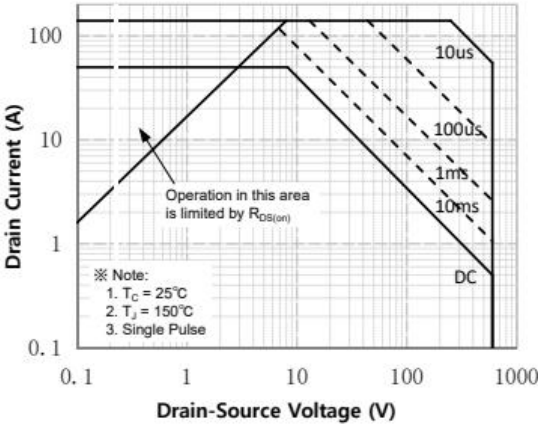


Figure 9. Maximum Safe Operating Area

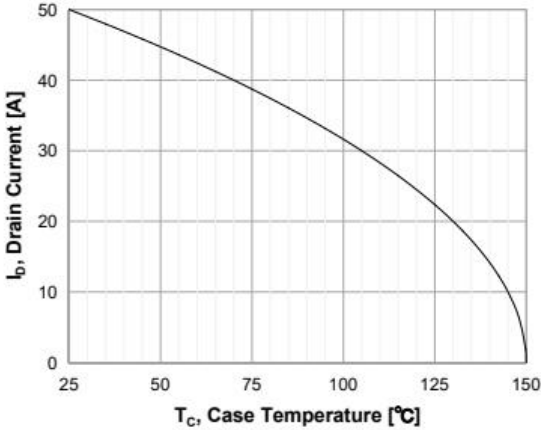


Figure 10. Maximum Drain Current vs. Case Temperature

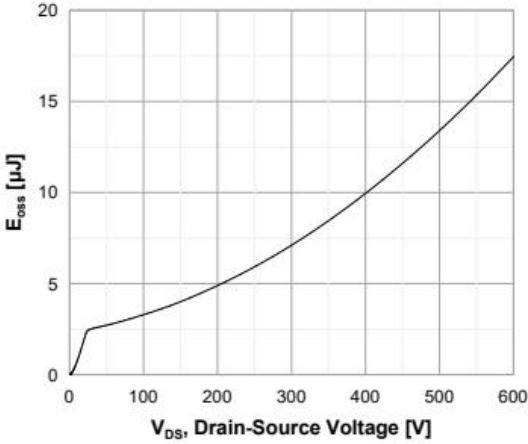


Figure 11. E_{OSS} vs. Drain to Source Voltage

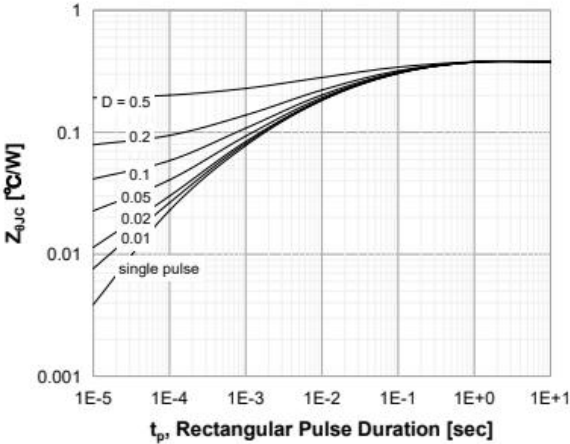
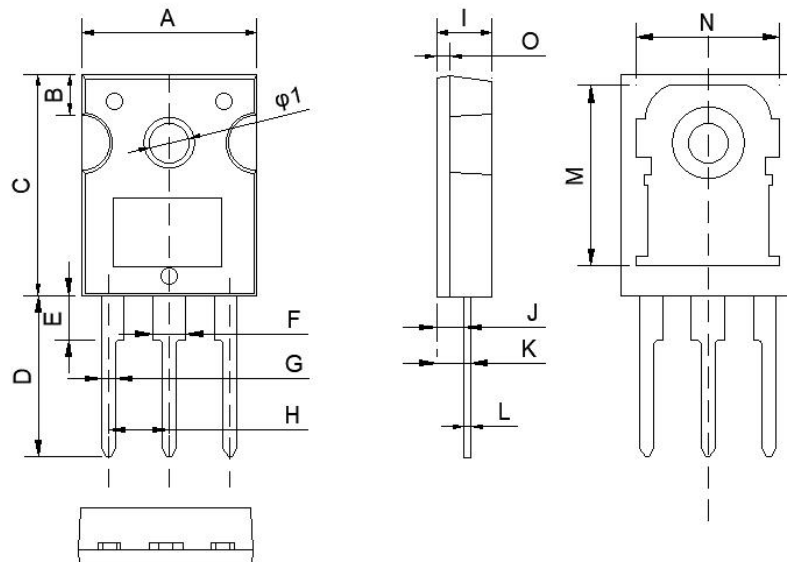


Figure 12. Transient Thermal Response Curve

●PACKAGE MECHANICAL DATA

TO-247



Symbol	Millimeter		Inches	
	Min	Max	Min	Max
A	15.5	16.5	0.610	0.650
B	3	3.6	0.118	0.142
C	19.5	20.5	0.768	0.807
D	14	15	0.551	0.591
E	3.8	4.3	0.150	0.169
F	2.8	3.4	0.110	0.134
G	1.1	1.4	0.043	0.055
H	5.32	5.58	0.209	0.220
I	4.9	5.1	0.193	0.201
J	2.2	2.6	0.087	0.102
K	3.05	3.15	0.120	0.124
L	0.49	0.56	0.019	0.022
M	16	16.4	0.630	0.646
N	13.2	13.8	0.520	0.543
O	1.1	1.4	0.043	0.055
Φ 1	3.56	3.76	0.140	0.148