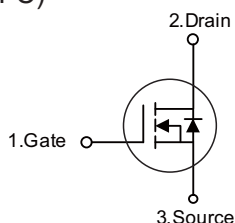


Features

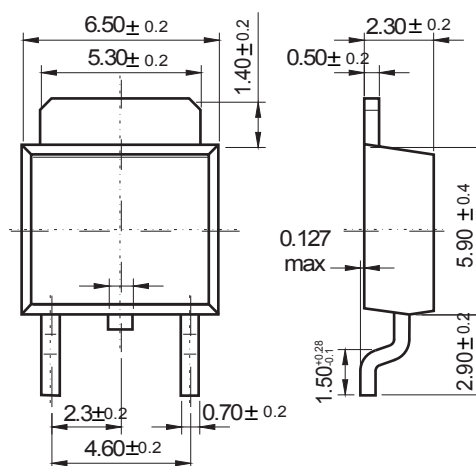
- 650V, 7A
- $R_{DS(ON)} = 0.51\Omega$ (Typ.) @ $V_{GS} = 10V$, $I_D = 3.5A$
- Fast Switching
- Improved dv/dt Capability
- 100% Avalanche Tested

Application

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)


TO-252

Unit: mm


ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain – Source voltage	V_{DSS}	650	V
Gate – Source voltage	V_{GSS}	± 30	V
Continuous drain current	I_D	$T_C=25^\circ\text{C}$ 7.3	A
		$T_C=100^\circ\text{C}$ 4.6	A
Pulsed drain current ⁽¹⁾	I_{DM}	21.9	A
Power dissipation	P_D	25	W
Single - pulse avalanche energy	E_{AS}	142	mJ
MOSFET dv/dt ruggedness	dv/dt	50	V/ns
Diode dv/dt ruggedness ⁽²⁾	dv/dt	15	V/ns
Storage temperature	T_{stg}	-55 ~150	$^\circ\text{C}$
Maximum operating junction temperature	T_j	150	$^\circ\text{C}$

1) Pulse width t_P limited by $T_{j,max}$

2) $I_{SD} \leq I_D$, $V_{DS\ peak} \leq V_{(BR)DSS}$

600R65

Electrical Characteristics (T_C=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain – Source Breakdown voltage	V _{(BR)DSS}	650	-	-	V	V _{GS} = 0V, I _D = 250uA
Gate Threshold Voltage	V _{GS(th)}	2	3	4	V	V _{DS} = V _{GS} , I _D = 250uA
Zero Gate Voltage Drain Current	I _{DSS}	-	-	1	uA	V _{DS} = 650V, V _{GS} = 0V
Gate Leakage Current	I _{GSS}	-	-	100	nA	V _{GS} = ±30V, V _{DS} = 0V
Drain-Source On State Resistance	R _{DS(ON)}	-	0.51	0.60	Ω	V _{GS} = 10V, I _D = 3.5A
Input Capacitance	C _{iss}	-	545	-	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	640	-		
Reverse Transfer Capacitance	C _{rss}	-	28.6	-		
Effective Output Capacitance Energy Related ⁽³⁾	C _{o(er)}	-	18.8	-		V _{DS} = 0V to 520V, V _{GS} = 0V, f = 1.0MHz
Turn On Delay Time	t _{d(on)}	-	18	-	ns	V _{GS} = 10V, R _G = 25Ω, V _{DS} = 325V, I _D = 7.3A
Rise Time	t _r	-	33	-		
Turn Off Delay Time	t _{d(off)}	-	80	-		
Fall Time	t _f	-	28	-		
Total Gate Charge	Q _g	-	13.8	-	nC	V _{GS} = 10V, V _{DS} = 520V, I _D = 7.3A
Gate – Source Charge	Q _{gs}	-	3.6	-		
Gate – Drain Charge	Q _{gd}	-	5.6	-		
Gate Resistance	R _G	-	20	-	Ω	V _{GS} = 0V, f = 1.0MHz
Continuous Diode Forward Current	I _{SD}	-	-	7.3	A	
Diode Forward Voltage	V _{SD}	-	-	1.4	V	I _{SD} = 7.3A, V _{GS} = 0V
Reverse Recovery Time	t _{rr}	-	272	-	ns	I _{SD} = 7.3A di/dt = 100A/μs V _{DD} = 100V
Reverse Recovery Charge	Q _{rr}	-	3	-	uC	
Reverse Recovery Current	I _{rrm}	-	22.2	-	A	

3) C_{o(er)} is a capacitance that gives the same stored energy as C_{oss} while V_{DS} is rising from 0V to 80% V_{(BR)DSS}

RATING AND CHARACTERISTIC CURVES (600R65)

Fig.1 On-Region characteristics,

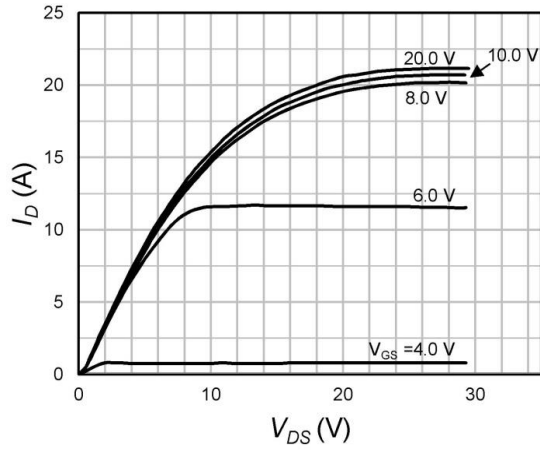


Fig.2 On-resistance Variation with Drain Current and Gate Voltage

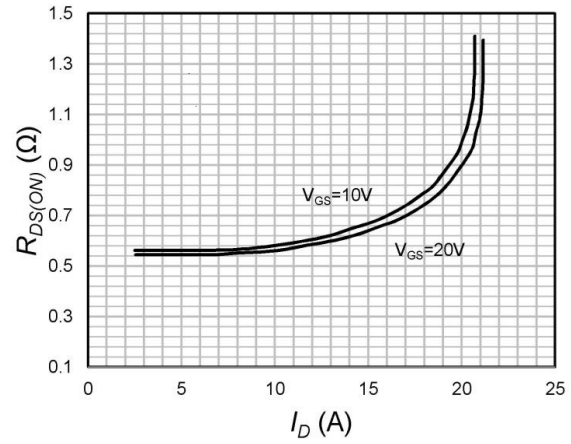


Fig.3 On-Resistance Variation with temperature (Normalized)

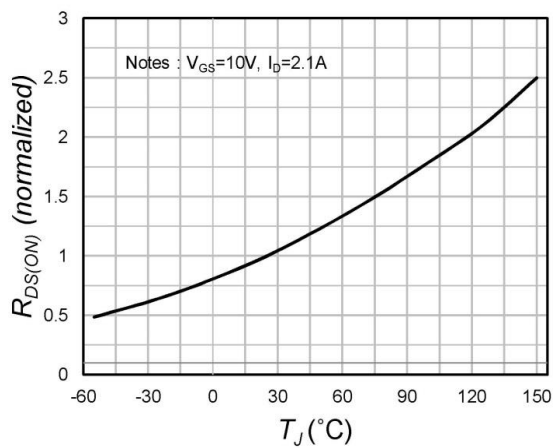


Fig.4 Breakdown Voltage Variation vs. Temperature (Normalized)

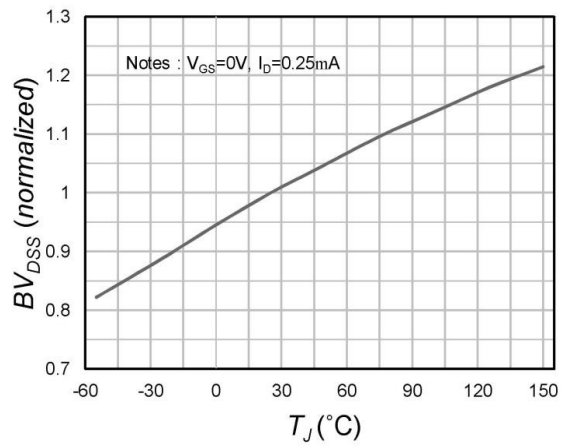


Fig.5 Transfer Characteristics

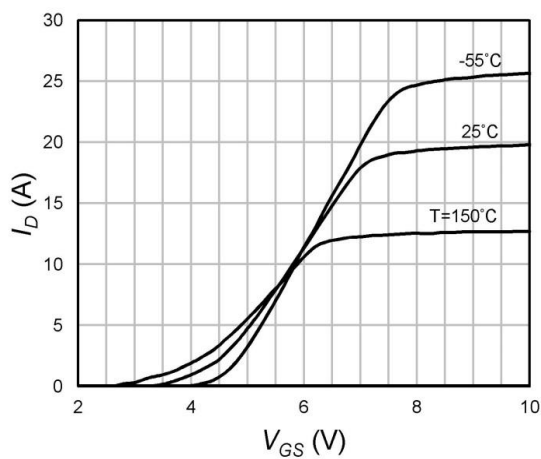
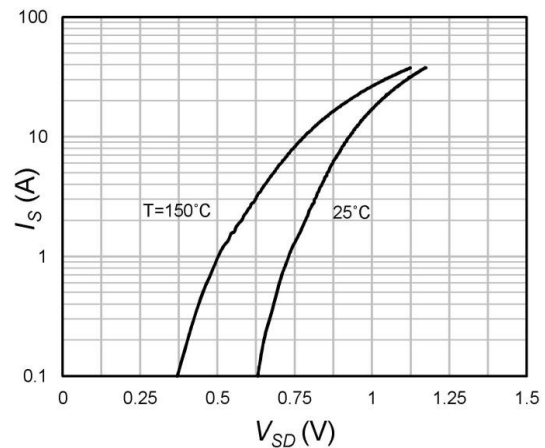


Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature



RATING AND CHARACTERISTIC CURVES (600R65)

Fig.7 Gate charge Characteristics

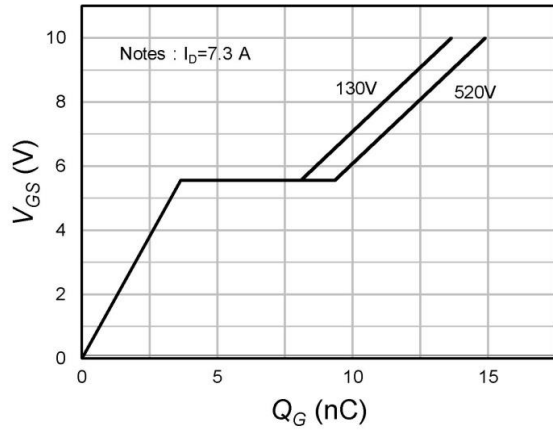


Fig.8 Capacitance Characteristics

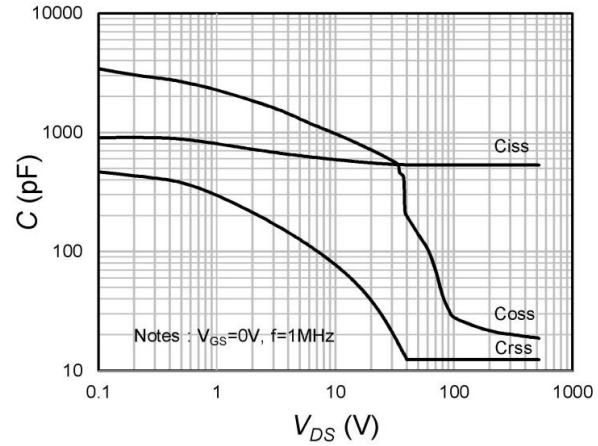


Fig.9 $V_{GS(th)}$ Variation with Temperature (Normalized)

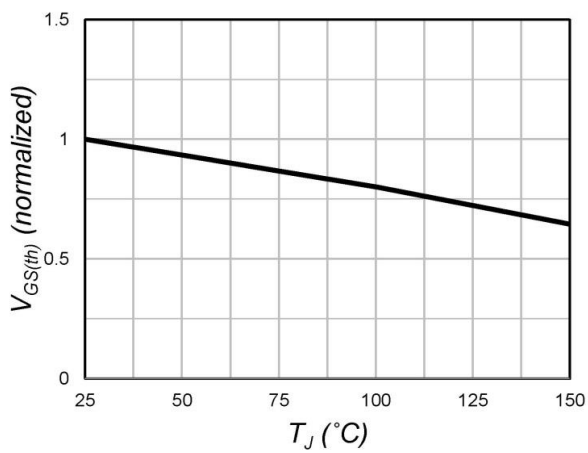


Fig.10 Maximum Drain Current vs. Case Temperature

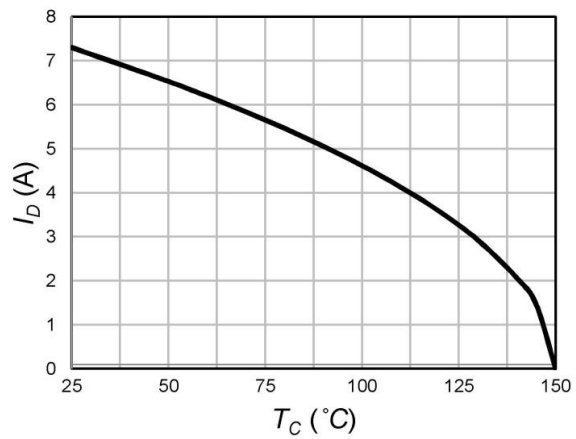


Fig. 11 Single Pulse Maximum Power Dissipation

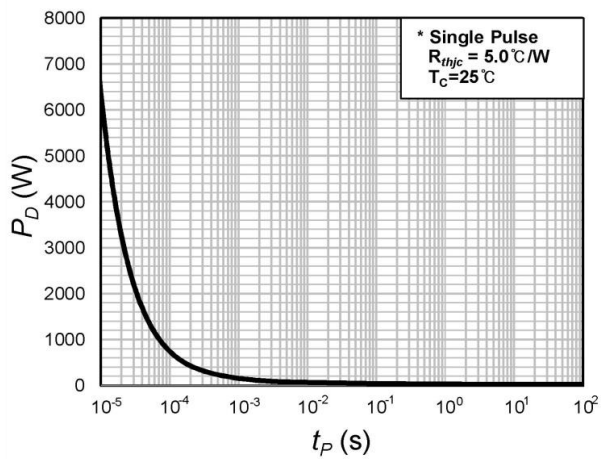
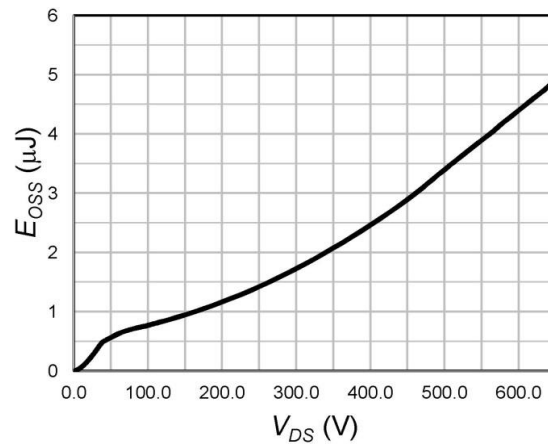


Fig. 12 Output Capacitance Stored Energy



RATING AND CHARACTERISTIC CURVES (600R65)

Fig.13 Transient Thermal Response Curve

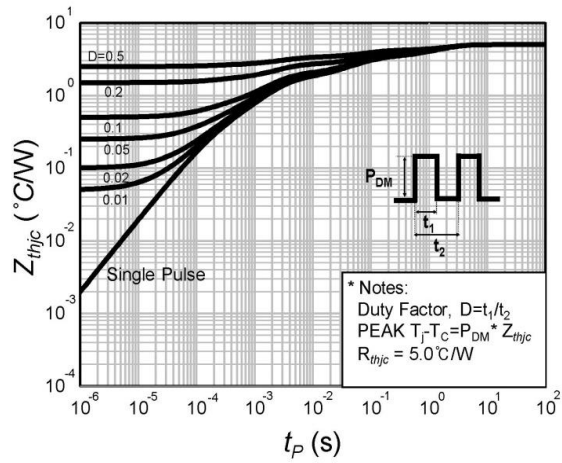


Fig. 14 Maximum Safe Operating Area

