

FEATURES

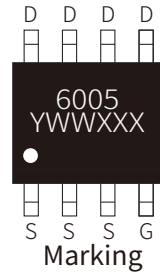
- Surface-mounted package
- Low gate charge



SOP-8

APPLICATION

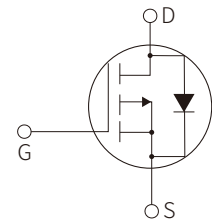
- Motor driver appliances
- Adapter appliances
- High power inverter system



Marking

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage $T_A=25^{\circ}\text{C}$	V_{DS}	-60	V
Drain Current (Pulsed) $T_A=25^{\circ}\text{C}$ $V_{GS}=-10\text{V}$	I_{DM}^{**}	-18	A
Drain Current (DC)	I_D^*	-5	A
		-2.9	A
Gate-Source Voltage $T_A=25^{\circ}\text{C}$	V_{GS}	± 20	V
Total Power Dissipation $T_A=25^{\circ}\text{C}$	P_{tot}^*	2	W
Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Thermal Resistance- Junction to Ambient	$R_{\theta JA}^{**}$	62.5	$^{\circ}\text{C/W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}^{**}$	3.5	$^{\circ}\text{C/W}$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{sec}$
- ** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- ** Limited by bonding wire

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=-250\mu A$	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1		-2.5	V
Drain Leakage Current	I_{DSS}	$V_{DS}=-48V, V_{GS}=0V$			-1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Drain-Source On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_D=-3A$		53	60	m Ω
		$V_{GS}=-4.5V, I_D=-2A$		69	85	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=-3A, V_{GS}=0V$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-3A$ $dI_{SD}/dt=100A/\mu s$		15		nS
Reverse Recovery Charge	Q_{rr}			12		nC
Dynamic Characteristics ^b						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-30V,$ Frequency = 1 MHz		1480		pF
Output capacitance	C_{oss}			63		pF
Reverse transfer capacitance	C_{rss}			54		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-30V, V_{GEN}=-10V$ $R_G=3.9\Omega, R_L=10\Omega,$ $I_{DS}=-3A$		5.5		nS
Turn-on Rise Time	t_r			3.7		nS
Turn-Off Delay Time	$t_{d(off)}$			102		nS
Turn-Off Fall Time	t_f			38		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=-30V, V_{GS}=-10V, I_{DS}=-3A$		25		nC
Gate-Source Charge	Q_{gs}			6.5		nC
Gate-Drain Charge	Q_{gd}			3.4		nC

Notes:

a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

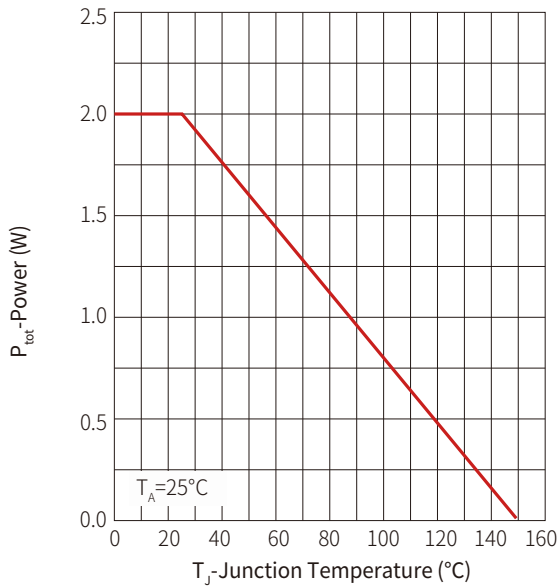


Figure2: Drain Current

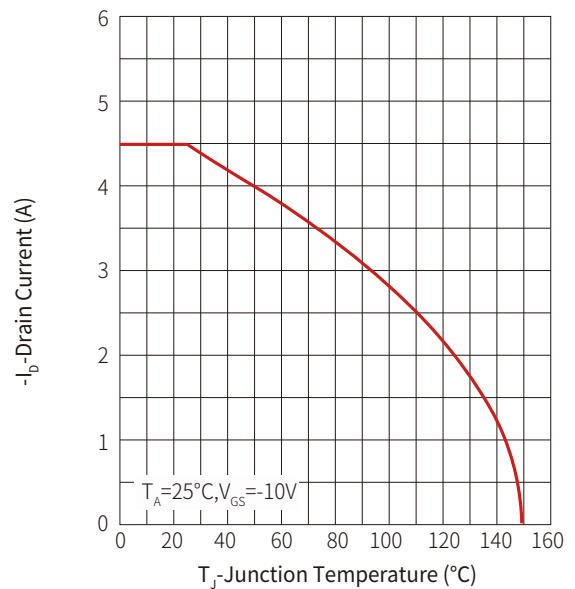


Figure3: Safe operating Area

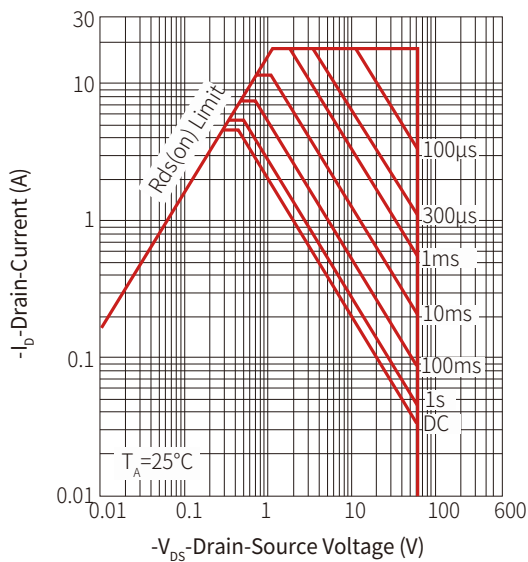
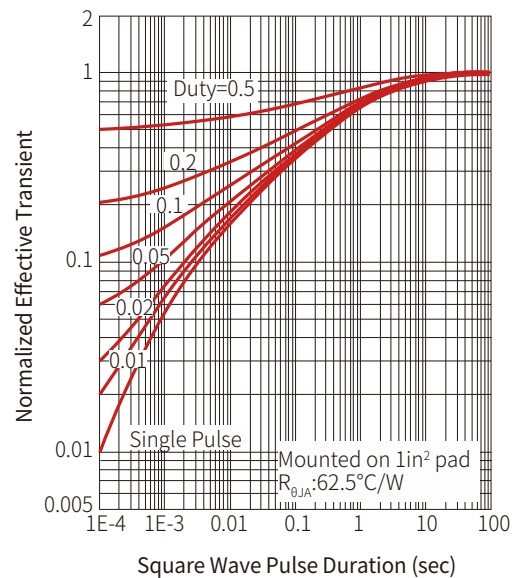


Figure 4: Transient Thermal Impedance



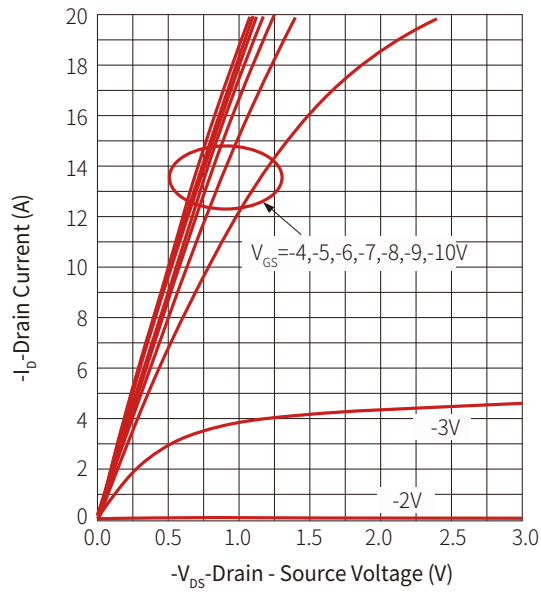
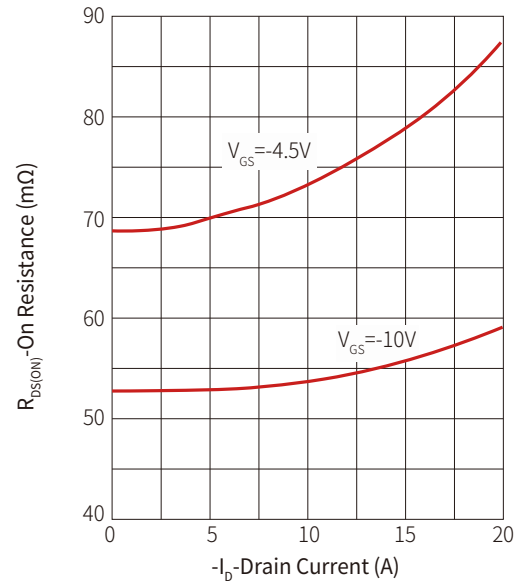
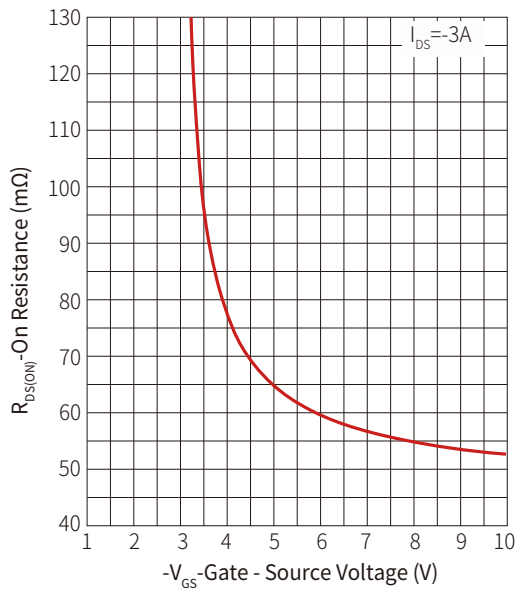
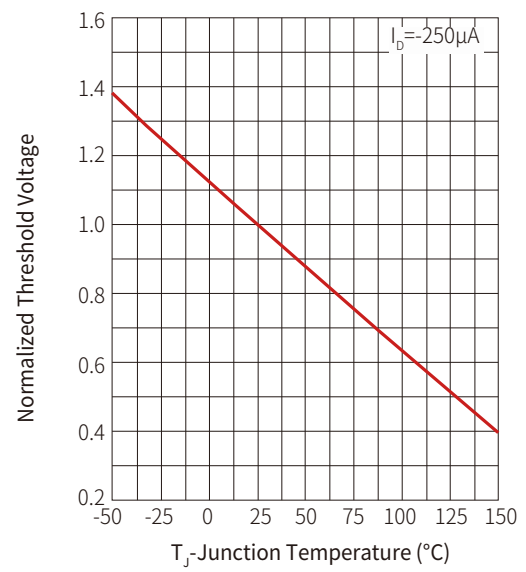
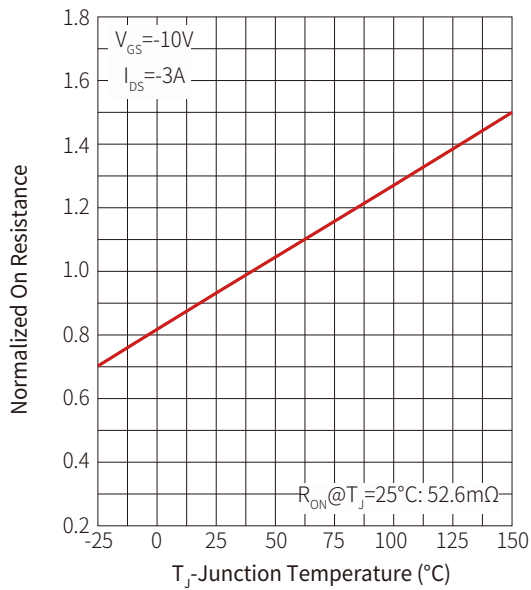
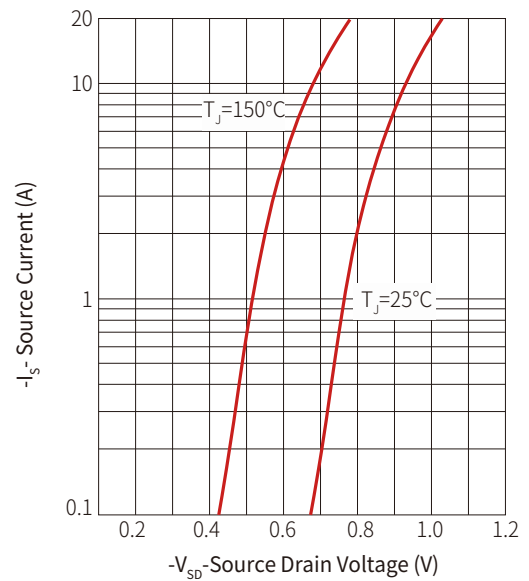
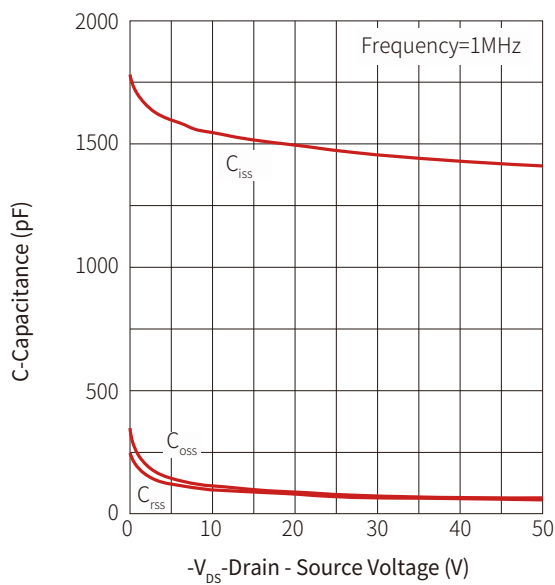
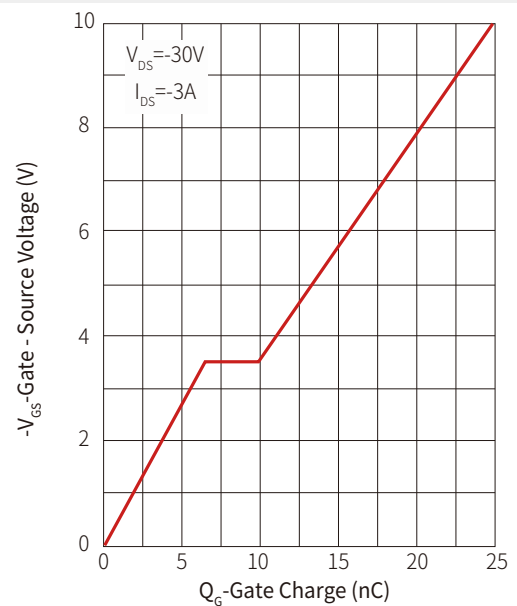
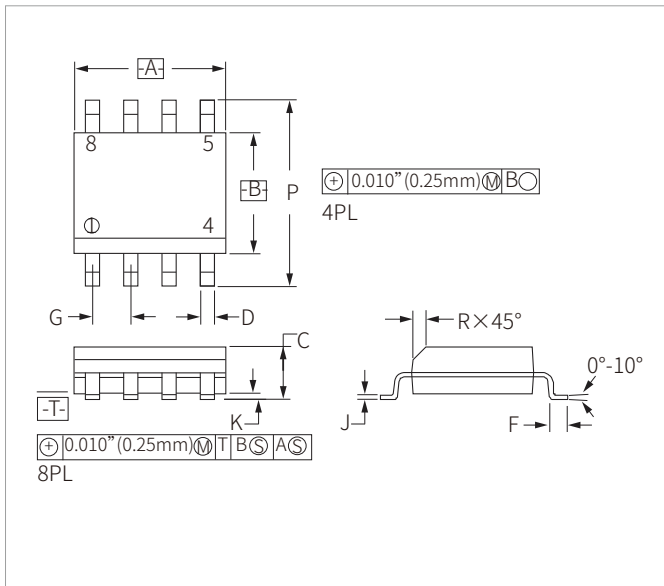
**Figure 5: Output Characteristics****Figure 6: On Resistance****Figure 7: Transfer Characteristics****Figure 8: Normalized Threshold Voltage**

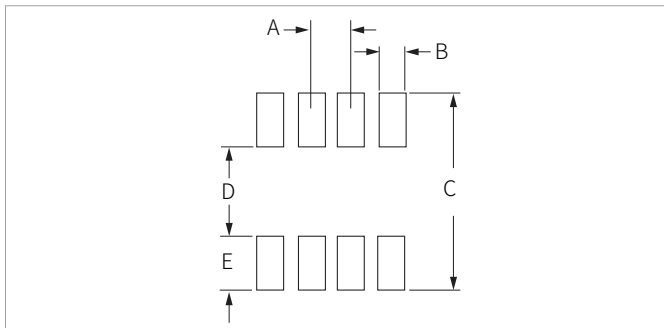
Figure 9: Normalized On Resistance

Figure 10: Source-Drain Diode Forward

Figure 11: Capacitance

Figure 12: Gate Charge


SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
B	3.80	4.20	0.150	0.165
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.050BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.008
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	1.14	1.40	0.045	0.055
B	0.64	0.89	0.025	0.035
C	6.22	-	0.245	-
D	3.94	4.17	0.155	0.165
E	1.02	1.27	0.040	0.050

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM6005PE	SOP-8	3000PCS	13"

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